ORBIT 24

A publication
of the
Ontario Institute
for Studies
in Education

Ideas
about Teaching
and Learning
Volume 5, Number 4
October 1974

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The Women's Kit

A Thinking Program for the Elementary School

H.S.I Studies

Pedagogical Pollution

Teachers as a group or as individuals are a sorry lot. We seem to be so concerned with the me that we ignore the we. Our walls are no longer the hallowed ones of learning of years gone by. Walls are erected by builders for privacy, protection, and aesthetic continuity. Personal walls serve the same purposes minus the artistic senses. Societal pressures are tremendous — we're trained to both acknowledge and conform to them from paranatal time. It's human nature to protect thyself. Yet, how can we, as leaders of our young children, cope when we continually bang our noses on doorjambs? Our personalities seem to have an open-door policy until someone tries to enter our inner room. Many of us can perpetuate the wide-open spaces with our charges, yet just let an adult step one foot too close and bam! How closely do we resemble our students in behavior which will protect our obviously precarious self-esteem?

I'm fed up with defensive reactions in so-called professionals. I'm fed up with defensive reactions in myself. I've been trained to do a job, but experience has taught me that I've got much more than a job. But can I enjoy this profession . . .? Due to some weakness in my internal structure, I 'overreact' to situations and people. Then I attack — all tongues forward. I know I'm not alone but I've found that informing my co-workers of this flaw in their character does not make me the most popular person.

I don't have any answers. If I cannot control my own defense mechanisms, I certainly can't preach to others. But I sure can work on my own problems. In the true style of prescriptive teaching, I have diagnosed the problem. Now I'm about to begin the program modifications. My plan: 1. listen; 2. feel; 3. react; 4. refrain from attack.

This is an urgent plea to all pedagogists — clean up the personality pollution. We're slowly but surely dying inside. If you can use a bulldozer — great. If not, get yourself a sturdy chisel. But, for your sake and that of your associates, be they 6 or 60 — break down those walls!

Cathy Telfer

P.S. Just in case one of my supervisors reads this — it's nothing personal. I didn't mean to offend anybody. . . .

Vol. 5/No. 4/October 1974
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Cover: A one-to-one situation, as depicted in the cover photograph, is the best for developing thinking skills — see article "To Create a Thinking Program for the Elementary School."

Audience: *Orbit* is published by the Ontario Institute for Studies in Education for everybody involved in or concerned with education.

Content: *Orbit* features information about educational research and development and, in addition to discussing work carried out by OISE and schools across Ontario, draws on material from other Canadian provinces and other countries. Les articles qui intéressent surtout les francophones paraissent en français.

Contributions: We should be glad to receive from readers articles about educational practice, criticisms of past issues of *Orbit*, and suggestions for future issues. Before submitting full-length articles, a preliminary letter should be sent to the editor.

Indexing: *Orbit* is indexed in Current Index to Journals in Education and Canadian Education Index.

Subscription: $3.00 per volume (5 issues). Not published in August. Available only to subscribers; no individual copies for sale. Subscriptions should be addressed to Publications Sales, OISE, 252 Bloor Street West, Toronto, Ontario M5S 1V6. Please enclose a check or money order payable to the Ontario Institute for Studies in Education.

One School System's Approach to Professional and Program Development 1973/74

Sister Margaret Twomey
Kenora RCSS Board

Over the past five years, our school system has conducted a series of teachers' workshops and in-service sessions designed to respond to needs identified by the administration and the teachers and to follow up on suggestions from Ministry of Education consultants. However, as the work progressed, careful evaluation revealed that our activities were having little impact on classroom practice. In an attempt to close the gap between theory and practice and to make our work meaningful in the classroom, we undertook to coordinate our in-service training and to establish goals and objectives for the system.

We realized that our first step was to enunciate our educational philosophy. We had to decide where the system was going and how it would get there; what our assumptions were about how children learn; what, exactly, was the teacher's role; and what the board saw as the ideal human product of the schools.

This was a sizable problem and we approached it by setting up an Education Council with representation from the trustees, principals, and teachers. We felt that by involving a cross-section of the system in the decision-making process, we were greatly increasing the likelihood of having our planning implemented.

To enable the group to get better acquainted and interact more meaningfully, we planned our first meeting as a two-day live-in session at a local tourist camp. Our agenda focused on practice, communication techniques and procedures, and discussions of what we regarded as the ideal in terms of both school system and student. The live-in session was followed by additional meetings in which the council continued its discussion of our aspirations for our children and the means whereby we might achieve them. We attempted to synthesize the feelings of the group and established a writing committee to prepare a statement of philosophy and goals. When the statement was complete, we presented it to the board; it was approved and adopted as a formal statement of the philosophy and goals of our school system.

We now had a formal set of goals, but they needed to be clarified and interpreted before we could establish change procedures and relevant criteria for evaluation. The situation was resolved when the board's academic administrator prepared a statement of systems objectives. In it she discussed stages of child development, how children learn, desirable school and classroom environments, and the roles of teachers and principals. The board's philosophy was now clearly enunciated and means of implementing it became our immediate concern. This provided an ongoing focus for our in-service programs and conferences on classroom practice. We are now preparing a statement of objectives at the school level that will reflect the level of child development as well as the aspirations of the community.

As time passed, we became increasingly conscious of our need for an organized, sequential, developmental in-service program. Since a Ministry of Education winter course in the communications process offered a promising starting point, we arranged sessions for Friday night and Saturday on alternate weekends. The course was effective, but the 120 hours involved taxed the participants heavily. The Ministry's announcement of released time for professional development relieved this pressure and enabled us to introduce an in-service program that was much less demanding in terms of teacher time but provided ample opportunity for examination of an integrated studies approach to learning in the light of the new P_1J_1 curriculum guideline. An authorized Ministry course, 50 percent of which was scheduled on school time, appealed to the teachers and approximately 80 percent of the staff signed up for it.

We planned our course with an input session at the beginning of each month, followed by a staff meeting at which the teachers could examine the current topic as it related to their immediate situations. Our intent was to provide a definite opportunity for the staff to focus on professional topics and philosophize about learning theory rather than discuss maintenance functions, discipline, washroom routines, and the like.

Again we began with a two-day live-in at a local tourist camp and together we examined the teacher/person and the child/person and the interaction that should exist between the two.

The second session of the course was devoted to examining the communications process at the adult level. The course planners undertook to establish a foundation of better interpersonal relations at the outset in order to facilitate a team approach at the local staff level.

We then gave the teachers an opportunity to acquire an overview of the philosophy of the new P_1J_1, to examine learning theory, and to study classroom practice. In the numerous sessions that followed, we examined curriculum content in terms of the people and things that made up the child's environment. These input sessions culminated in a planned exercise that gave course participants an opportunity to use the skills and concepts they had learned to develop a local studies unit. Although the finished product will be of benefit to the schools, it is the process that was seen as the crucial learning experience for teachers since future curriculum development will take place at the local level.

A session on evaluation techniques will complete the course and provide an opportunity for teachers to look at themselves as people, to examine their performance as professionals, and to assess the type of learning situation and interaction with children that exists in the classroom. Teachers, individually and collectively, will also be given an opportunity to make plans for the coming year.

Another key achievement of the past year was the setting up of a teacher center – a 'people place' for the professional, program, and personal development of all those involved in the school system. All professional material (books, magazines, audiovisual materials) were centralized and space was set aside for teachers to meet, relax, and work together. Again the objective was total involvement, and the two-room center was decorated and prepared by volunteers from the entire system – teachers, secretaries, caretakers, and trustees. The center contained a quiet area for reading or studying, a lounge with a stereo, a workroom, and a graffiti wall for visitors' signatures.

Weekly sessions, ranging from instruction in various art forms to study of such serious concerns as theology, have been offered for interested participants. The purpose of the 'people place' is to extend the experiences and enrich the background of the teachers and other people who deal with children. Grade-level and specific-program meetings have been organized, and it is hoped that greater use will be made of the center in the future and that professional staff meetings will be conducted there on a semester basis at least.

The appointment of a resource teacher was another significant forward step. This teacher, with extensive experience at the classroom level, was appointed to assist our teachers in planning programs and implementing them in their classrooms. She also assisted teachers with special responsibilities in developing appropriate programs. In this connection, an outdoor education kit was prepared for each school. The resource teacher also had responsibility for the teacher center, and at the various input sessions she arranged opportunities for discussion of learning at the local level as an integrated whole.

Parallel to this concept was a focus on team teaching. Experience has proved that teams are not made; they happen. So, when two teachers at the primary level and two teachers at the junior level indicated a preference to work together, every effort was made to encourage them to do so. As the year progressed, these teams were asked to share their insights and experiences with other teachers in the system as well as with the trustees and the parents.

These particular sessions proved to be among the most valuable of any of our in-service sessions. They indicated that ordinary people from within our own ranks, faced with similar class loads and situations, were able to create an exciting and innovative approach to education. Inter-class and inter-school visits and professional discussions concerning program development followed quite naturally, and soon a desire to try new approaches was apparent throughout the system.

Another change came in the setting up of a junior kindergarten program in a five-room school leased from the Department of Indian Affairs. Over the years, many children in the primary level have required remediation. Analysis suggested that the level of participation in formal learning expected of these children was unrealistic, and a play environment was established under the direction of teachers trained in early childhood education. Here the children can develop healthy self-images, experiment with language, and experience concepts in a concrete manner. The teachers were encouraged to regard this period as essential basic preparation for the more structured learning of later years.

Throughout the year, the teachers attempted to analyze the learning taking place and to identify the approaches that stimulate thought and produce action in the various interest areas. The teachers involved in early childhood education have held frequent meetings to explore such topics as language development and the extension of centers devoted to their work. From time to time, they have shared their findings with other primary teachers, parents, and trustees.

Although we worked diligently at helping teachers to grow as people and as professionals, we realized that maximum benefit to the system would not result if their growth took place in isolation. We had to foster parallel growth in other segments of the educational community – among parents and trustees. We set up meetings for trustees on a monthly basis and discussed with them early childhood education, environmental studies, team teaching, and other areas of current concern. We scheduled similar meetings for parents and arranged for them to see programs in action. We also organized volunteer programs for parents who wished to help in the school. To promote a sense of community, we published a booklet outlining the philosophy and programs of the system, and each semester we send home with the children a newsletter of students' activities and writings. We see this as an effective means of minimizing the gap between the theory of the practitioner and the understanding of the general public.

This year has been a turning point in our system. We have not arrived, but we are well on our way. Child-centered programs are emerging, teachers are re-evaluating their roles as facilitators of learning, and our goal of 'fostering the full development of the whole person' is becoming a reality.

Resource Materials for Elementary School Science Teachers

—a bibliography/directory of curriculum projects and publishers related to the 'Unit Box' approach as described in *Orbit* 22

Mitchell E. Batoff
Jersey City State College

The following bibliography/ directory can be used in at least four ways:

— To provide useful input for elementary school science curriculum development;

— to help teachers implement the Unit Box approach by pinpointing sources of teacher's guides, the starting points of Unit Boxes (see *Orbit* 22);

— to help teachers, administrators, coordinators, and others implement the Unit Box approach in in-service teacher preparation programs;

— to help resource people in schools, colleges, and teacher centers to establish or update a curriculum resources information bank as suggested by Nay, Dyer, Batoff, and others.

African Primary Science Project (APSP). Education Development Center, 55 Chapel St., Newton, Mass. 02160. More than 40 teacher's guides.

Vancouver Environment Education Project (VEEP). University of British Columbia, Vancouver. 18 teacher's guides and other items relevant to urban and wilderness studies.

Australian Science Education Project (ASEP). Stores Branch, Education Department of Victoria, 107 Russell St., Melbourne, Victoria 3000. Funded by the Commonwealth and the States, this project has developed and evaluated 41 module packs directed toward use in grades 7 to 10, but useful below and above this range as well. ASEP is a student-centered, life-oriented, activity-based, inquiry approach to integrated science. (See *Orbit* 18, 'The Australian Science Education Project.') The most feasible introduction is to study the unit for teachers, *A Guide to ASEP*. Trial versions of this unit are available at 3 centers in Canada (OISE, University of Lethbridge, and Provincial Science Teachers' Association of British Columbia) and 14 centers in the United States.

Australian Junior Secondary Science Project (JSSP). Cheshire Publishing Pty. Ltd., 346 St. Kilda Rd., Melbourne, Victoria, Australia 3004. The second edition of JSSP consists of 17 units published between mid-1973 and mid-1974. At least 4 JSSP units are considered particularly suitable for use in conjunction with ASEP materials.

Bainbridge, J.W.; Stockdale, R.W.; and Wastnedge, E.R. *Junior Science Source Book*. William Collins Sons & Co., 100 Lesmill Rd., Don Mills, Ont. M3B 2T5. Valuable reference.

Biological Sciences Curriculum Study (BSCS). Elementary School Science Modules. BSCS, Box 930, Boulder, Colo. 80302. 1974.

Board of Education of Baltimore County (BEBCO). Greenwood, 6901 North Charles St., Towson, Md. 21204 (Attention: Katherine M. Klier). 30 modular teacher's guides available for use in grades 1–6.

Book-Lab Inc., 1449 37th St., Brooklyn, N.Y. 11218. *Map Making; Mirrors; Mathematical Shapes; Polyhedral Shapes*; and other items.

Brandwein, Paul F., and Ruchlis, Hy. *Invitations to Investigate: An Introduction to Scientific Exploration*. Longman Canada Ltd., 55 Barber Greene Rd., Don Mills, Ont. M3C 2A1.

British Columbia Teachers' Federation Lesson Aids Service, 105-2235 Burrard St., Vancouver 9, B.C. Various modular teacher's guides and mini-units available. Examples: *Bubbles; Styrofoam; The Egg.*

Busch, Phyllis S. Science Project Related to Upgrading Conservation Education (Project SPRUCE) and Project in Imaginative Nature Education (Project PINE). Various teacher's guides are available through the ERIC Document Reproduction Service operated by Leasco Information Products, 4827 Rugby Ave., Bethesda, Md. 20014 (ED 035 540, ED 035 541, ED 034 676, ED 033 844). Of particular interest is the *Urban Discovery Manual, 75 Stimulating Ideas for Investigating Some Common Urban Resources Indoors and Outdoors*. Grades K–6. Contains a list of the 50 items in the Urban Discovery Box, along with suggestions on their use in the classroom (ED 033 844). See also article by Phyllis S. Busch in *Science Education*, 'An Urban Field Guide to Elementary Science.'

Canadian Orienteering Service, 446 McNicoll Ave., Willowdale, Ont. M2H 2E1. Teacher's guides on Mapping.

Conceptually Oriented Program in Elementary Science (COPES). Center for Educational Research and Field Services, School of Education, New York University, 51 Press Building, Washington Square, New York, N.Y. 10003. *Water-Mix*, a modular unit consisting of 15 activities, usable above grade 3, is available from American Science and Engineering, 20 Overland St., Boston, Mass. 02215.

Creative Publications Catalog. Box 10328, Palo Alto, Calif. 94303. Contains many useful teacher's guides and math/science manipulatives.

A Curriculum Guide for Aerospace Science. Grades 5–8. U.S. Government Printing Office, Washington, D.C. 20402 (GA-20-15-7R). 1968. Provides educators with an example of a successful aviation education curriculum. Developed in public schools in Lincoln, Nebraska.

Elementary Science Curriculum Study (ESCS). Department of Curriculum and Instruction, Memorial University, St. John's, Newfoundland. From McGraw-Hill Ryerson, 330 Progress Ave., Scarborough, Ont. M1P 2Z5. A first-rate curriculum project for grades 1–6, based on a mix of AAAS, APA, and ESS along with elements of SCIS and the philosophy of MINNEMAST.

Educational Research Council of America (ERC). *Individualized Science Investigations*. Allyn & Bacon, Rockleigh, N.J. 07647. *Model Car Science; Chromatography; Behavioral Science; Photography; Mapping Space*; and other topics.

Elementary Science Study (ESS). Education Development Center, Newton, Mass. From McGraw-Hill Ryerson, 330 Progress Ave., Scarborough, Ont. M1P 2Z5; French translations and adaptations of ESS Teacher's Guides from McGraw-Hill, Editeurs, 750 Boulevard Laurentien, Montreal, P.Q. 56 teacher's guides and related materials available.

Science 5/13. University of Bristol School of Education. From GLC

Educational Materials and Services, 115 Nuggett Ave., Agincourt, Ont. M1S 3B1. 20 teacher's guides available.

Farm Electrification Council. *Reference Listing of Electrification Education Programs and Materials*. Box 1008, Oak Brook, Ill. 60523. Teacher's guides, manuals, handbooks, kits, 4-H Club Electric Project program materials.

Fischertechnik Modular System from Germany. Fischer of America, 151 Forest St., Montclair, N.J. 07042. Instruction manuals for kits on statics, motor and gearing, electromechanics, and photoelectronics.

Fisher, S.H. *Jam Jar Science*, teacher's guide. Blond Educational Limited, 56 Doughty St., London W.C.1, England. 1968. 7 units in physical science.

Galt, James, and Company Limited, Brookfield Rd., Cheadle, Cheshire, England. 9 sets of activity cards, each set containing 18 cards. *Electricity; Electrostatics; Magnetism; Electromagnetism; Water; Air; Chemistry; Gas;* and *Sound*.

Gaskin, Theodore A., and Arena, John E. GLC Educational Materials and Services, 115 Nuggett Ave., Agincourt, Ont. M1S 3B1. 4 modular teacher's guides and laboratory units: *Electricity and Magnetism; Mechanics; Wave Motion;* and *Measurements*.

Gilbert Sound Experiments. The A.C. Gilbert Company, New Haven, Conn. 1920. One of the very early science kit/manual combinations for children.

Gillespie, D. Craig. *Weeple People; Colour Weeples;* and other modular teacher's guides. McGraw-Hill Ryerson, 330 Progress Ave., Scarborough, Ont. M1P 2Z5.

Gull Lake Environmental Education Project. Kellogg Bird Sanctuary of Michigan State University, 12685 C Ave., Augusta, Mich. 49012. *Exploring Water* and other units.

Progress in Learning Science. A Schools Council Project at the University of Reading, School of Education, London Road, Reading, England RG1 5AQ. The general aim of the project (begun in April 1973) is to produce material for teachers to use in assessing children's development of scientific ideas and in applying this information to decide the kinds of science activities appropriate for their children.

Horwood, R.H., et al. *String; Bicycles; Mostly About Pigs;* and other modular units. Macmillan Company of Canada, 70 Bond St., Toronto, Ont. M5B 1X3.

Inaba, Lawrence Akio. 'The Development of a Framework for and a Model Teaching-Learning System in Electronics Technology for the Elementary School.' Ph.D. dissertation at Ohio State University, 1970. 332 pages. Microfilm/Xerographic copies, Order No. 70-26, 306.

Intermediate Science Curriculum Study (ISCS). Florida State University, Tallahassee. From GLC Educational Materials and Services, 115 Nuggett Ave., Agincourt, Ont. M1S 3B1. 1972. 8 modular units and other items. Junior high school level.

Investigating Science Series. From Book Society of Canada, Box 200, Agincourt, Ont. M1S 3B6. *Animals; Air; Water; Plants; Magnets*. Guides.

Jacobson, Willard J. *Population Education Project*. Department of Science Education, Teachers College, Columbia University, 525 West 120th St., New York, N.Y. 10027. Resource Guide is in progress and should be available late in 1974 or 1975.

Kidd, Kenneth P.; Myers, Shirley S.; and Cilley, David M. *The Laboratory Approach to Mathematics*. Science Research Associates, 44 Prince Andrew Place, Don Mills, Ont. M3C 2H4. 1970. The Unit Box approach also lends itself to teacher preparation for laboratory-centered mathematics teaching, as described in this and many other books.

Kimball, Richard L., editor and director. Educational Science Consultants, Box 1674, San Leandro, Calif. 94577. Modular teacher/pupil guides being developed. Examples: *The Housefly* as a *Classroom Animal; Rounds, Corners and Lines; Substances, Mixtures, Powders and Liquids; You and Me; Making Small Things Look Bigger; It's* a *Tangram World; The Shell Game*.

Individualized Science. Learning Research and Development Center, University of Pittsburgh. 50 multimedia modular units under development for use in grades K–8. Marketed by Imperial International Learning Corporation, Box 548, Route 45 South, Kankakee, Ill. 60901.

Marshall, J. Stanley; Podendorf, Illa; Swartz, Clifford; and Shoresman, Peter B. *Sense and Tell Teacher's Guidebook*, Unit 1 of Pre-Primary Science System. Gage Publishing, Box 5000, Agincourt, Ont. M1S 3C7. Teacher's guide and Unit Box for prekindergarten and kindergarten. Skill-oriented lessons developed from behavioral objectives.

Materials and Activities for Teachers and Children (MATCH): A Project to Develop and Evaluate Multimedia Kits for Elementary Schools. Final Report of Project No. 5-0710, Contract No. OE-4-16-019, U.S. Department of Health, Education and Welfare, Office of Education, Bureau of Research, Washington, D.C. May 1968. 16 modular teacher's guides and MATCH Boxes were developed by the project staff at the Children's Museum, Boston. Some are on display in the OISE library.

McGavack, John, and LaSalle, Donald P. *Guppies, Bubbles and Vibrating Objects: A Creative Approach to the Teaching of Science to Very Young Children*. Longman Canada Ltd., 55 Barber Greene Rd., Don Mills, Ont. M3C 2A1. Includes 21 mini-units.

Metric-Aids Ltd., 75 Horner Ave., Toronto, Ont. M8Z 4X7. Various Metrikit work card sets and teacher's guides: *Introductory; Linear Measurement; Weight and Mass; Volume and Capacity; Area and Geometry*.

Metric Association, Sugarloaf Star Route, Boulder, Colo. 80302. *Metric Supplement to Science and Mathematics*. 1967, 1971. 27 pp. 50c. Other useful metric items available.

Henry, Boyd. *Teaching The Metric System*. Weber Costello, 1900 North Narragansett Ave., Chicago, Ill. 60639.

The Metric System. Annotated Teacher's Edition, Student Edition. 1974. Addison-Wesley School Division, Eastern Region, South St., Reading, Mass. 01867. Student Edition (#1513) $1.50; Teacher's Edition (#1514) $1.50.

What About Metric? A lucid 16-page booklet by Louis E. Barbrow, Coordinator of Metric Activities, U.S. National Bureau of Standards. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. 80c. 0303-01191.

Metric Cluster. A mini-sequence of 7 modules from Science — A Process Approach II (SAPA-II) developed by the Commission on Science Education of the American Association for the Advancement of Science (AAAS). 1974. The 7 modules in this cluster are designed to teach the basic measuring skills related to length, mass, volume, and temperature. Further information on the entire cluster, on the separate modules, or on AAAS/SAPA in general can be obtained from Ginn and Company, 35 Mobile Drive, Toronto, Ont. M4A 1H6.

Minnesota Mathematics and Science Teaching Project (MINNEMAST), Minnesota School Mathematics and Science Center, University of Minnesota, 720 Washington Ave. S.E., Minneapolis, Minn. 55414. 29 teacher's guides integrating science and mathematics; interesting; creative. Intended for grades K–3 but many can be used in grades 4–6.

National Audubon Society. Educational Services, 950 3rd Ave., New York, N.Y. 10022. *Audubon Tree Study Unit;* also modular units on *Ecology; Mammals; Birds;* and *Plants;* teacher's manual for *A Place To Live*.

National 4-H Service Committee, 59 East Van Buren St., Chicago, Ill. 60605. *Catalog of Educational Aids*. Leader's guides on many topics.

National Science Teachers' Association. 1201 16th St. N.W., Washington, D.C. 20036. Environmental Education Material. *A Catalogue of Reviewed and Evaluated Free and Low-Cost Materials for Science, Social Studies,* and *Industrial Arts*. 27 industrial and government sponsors represented.

National Wildlife Federation, 1412 16th St. N.W., Washington, D.C. 20036. *Environmental Discovery Units*. 24 modular teacher's guides developed by the Minnesota Environmental Sciences Foundation.

Nuffield Mathematics Teaching Project. 12 Upper Belgrave Street, London S.W.1, England. Modular teacher's guides available from Longman Canada Ltd., 55 Barber Greene Rd., Don Mills, Ont. M3C 2A1. A partial list of titles: *Pictorial Representation; Shape and Size; Graphs; Environmental Geometry*.

Nuffield Foundation Junior Science Project. *Apparatus: A Source Book of Information and Ideas; Animals and Plants: A Source Book of Information and Ideas*. Agathon Press, 150 5th Ave., New York, N.Y. 10011. 1967. Five other Nuffield Guides in addition to the above.

Ontario Teachers' Federation Science Project, 797 Princess St., Kingston, Ont. K7L 1G1. More than a dozen modular teacher's guides available. One of these is *200 Outdoor Science Activities*, a teacher/pupil guide prepared by the OTF Science Curriculum Committee in 1969. Inasmuch as many of the activities in this guide require materials of some sort, a quasi Unit Box could be assembled for an outdoor education program using the guide as a springboard.

Outdoor Biology Instructional Strategies (OBIS), Lawrence Hall of Science, University of California, Berkeley, Calif. 94720. 24 OBIS folios available as of

June 1974. Some really new ideas.

Patterns. The Schools Council Integrated Science Project. Penguin Books Australia Ltd., 487 Maroondah Highway, Ringwood, Australia 3134. 1974. Teacher's handbook and modular topic books: *Population Patterns; Length and Measurement; Rocks and Minerals; Patterns of Reproduction, Development and Growth;* others.

Pollution Control Education Project. Union Public Schools, 2369 Morris Ave., Union, N.J. 07083. 6 (and eventually more) multimedia modular units available through Webster Division, McGraw-Hill, 1221 Avenue of the Americas, New York, N.Y. 10020.

Russell, Helen Ross. *A Teacher's Guide to Using the School Grounds for Environmental Studies: Ten-Minute Field Trips.* From Doubleday and Company, 105 Bond Street, Toronto, Ont. M5B 1Y3. 1973. Environmental studies require materials such as magnifying lenses, microscopes, thermometers, magnets, nets, collecting containers, field guides, etc., and a Unit Box may be assembled using all or part of this guide as a start. It is one of the best guides available on the subject, along with works of Busch, OTF Guide, *Science in Action,* Wentworth et al. (EYE), and National Wildlife *Environmental Discovery Units.*

Salisbury, Gordon. *Catalog of Free Teaching Materials.* 8th revised edition, 1973. 364 pp. $3.25. Available from Box 1075, Ventura, Calif. 93001. Valuable reference for some teacher's guides but mainly for printed materials component of Unit Box.

Schano, Edward A. *Leader's Project Guide for Incubation and Embryology.* 4-H Club Leaders Series. Department of Poultry Science, Rice Hall, Cornell University, Ithaca, N.Y. 14850. Guide made up of a series of 21 leaflets on topics such as 'How to Make a Still Air Incubator Using a Styrofoam Ice Chest,' 'Candling Eggs.'

Schmidt, Victor E., and Rockcastle, Verne N. *Teaching Science with Everyday Things.* McGraw-Hill Ryerson, 330 Progress Ave., Scarborough, Ont. M1P 2Z5. Inquiry-oriented, practical.

Schools Council Research Studies. *Evaluation in Curriculum Development: Twelve Case Studies.* Macmillan Education Limited, Basingstoke, Hants., England. 1973. Papers from the Schools Council's prospect-evaluators on aspects of their work in Great Britain. See Ch. 3 in particular on the *Science 5/13* project.

Science Curriculum Improvement Study (SCIS), University of California, Berkeley. From Gage Publishing, Box 5000, Agincourt, Ont. M1S 3C7. The French translation and adaptation of the SCIS program was completed in the spring of 1973; information is available from the Institute of Psychological Research, 34 Fleury St. W., Montreal, P.Q. H3L 1S7.

Science Concept Oriented Process Evolved Sequence (SCOPES). A second-generation elementary school science curriculum project based at the Malcolm Price Laboratory School, University of Northern Iowa, Cedar Falls, Iowa 50613 (Attention: D. Louis Finsand). 10 teacher's guides and related items are presently available, including two on metric measurement. Others are being developed.

Science Curriculum for Individualized Learning (SCIL). An individualized version of the Science Curriculum Improvement Study (SCIS), reference number 124, presently under development by Research for Better Schools, 1700 Market St., Philadelphia, Pa. 19103 (Attention: Marilyn Appel).

Science in Action. McGraw-Hill Ryerson, 330 Progress Ave., Scarborough, Ont. M1P 2Z5. Teacher's guides and related publications for out-of-classroom teaching. *Studying Soil; Studying Birds; Studying Insects; Studying Streams;* 4 others.

Science Project Books. Peter Haddock Limited, Bridlington, England. 1973. *Experiments with Light; Experiments with Plants; Experiments with Solids; Experiments with Sound;* and over 100 other similar titles. Can serve as inexpensive quasi resource units for teacher and/or pupil.

Science Teachers' Association of Ontario (STAO). *Catalogue of Curriculum Resources.* Suite S904, 252 Bloor Street West, Toronto, Ont. M5S 1V7. Catalogue contains brief descriptions and prices of several hundred teacher's guides contributed by over 30 boards of education, individual schools, and other sources around the province. Some are available in French.

Selective Educational Equipment (SEE) Inc. 3 Bridge St., Newton, Mass. 02195. Science and Math (SAM) Lab teacher's guide and set of 550 activity cards, *The Camera Cookbook* developed at the Workshop for Learning Things, maths mini-lab activity cards and teacher's guide, learning games, and other useful items.

Shoreline Public Schools Interdisciplinary Outdoor Education Project. School District No. 412, 158th and 20th Avenue N.E., Seattle, Wash. 98155. At least two modular teacher's guides are available: *Insects* (very thorough) and *Behavior of Mealworms* (more structured than the ESS unit).

Spectrum Educational Supplies. 9 Dohme Ave., Toronto, Ont. M4B 1Y7; 1401 West Broadway, Suite 16, Vancouver, B.C. Activity card sets and teacher's guides accompany various kits — *Electricity Laboratory; Heat; Light; Mechanics; Sound;* others.

Stone, A. Harris. *Science Inquiry Project Series.* From Prentice-Hall of Canada, 1870 Birchmount Rd., Scarborough, Ont. M1P 2J7. A series of 15 books (such as *The Heat's On!* and *Lemon Chemistry*) written for children and published between 1966 and 1974. Each of these can also serve as an inquiry-oriented resource guide for the teacher (like an ESS teacher's guide) and as such may be used as the starting point for a Unit Box on a particular topic.

Suchman, J. Richard. *Inquiry Development Program in Physical Science* (IDP). Science Research Associates, 44 Prince Andrew Place, Don Mills, Ont. M3C 2H4. Some very intriguing and worthwhile Unit Boxes can be assembled using IDP problems as a focus.

Swartz, Clifford E. *Measure and Find Out: A Quantitative Approach to Elementary School Science.* An NSF-funded curriculum project formerly based at the State University of New York at Stony Brook, Long Island. 2 books for pupils and 2 teacher's guides are presently available. Gage Publishing, Box 5000, Agincourt, Ont. M1S.3C7.

Tannenbaum, Harold E.; Tannenbaum, Beulah; Stillman, Nathan; and Stillman, Myra. *Experiences in Science* (EIS). 1966, 1975. From McGraw-Hill Ryerson, 330 Progress Ave., Scarborough, Ont. M1P 2Z5. 36 modular teacher's guides and related items for use in grades 1–6.

Teaching about Drugs. A Curriculum Guide, K–12. 2d edition. American School Health Association, 107 South Depeyster St., Kent, Ohio 44240.

Unified Science and Mathematics for Elementary Schools (USMES). Education Development Center, 55 Chapel St., Newton, Mass. 02160. 12 units available to the public for use in grades 1–8. During the 1973/74 year 15 additional units were being developed. See *EDC News,* issues 1–4; *School Science and Mathematics,* October 1974; and *Mosaic* (published by the National Science Foundation), vol. 5, no. 1, Winter 1974.

Waters, Barbara. *Ocean in Your Classroom.* K–4 Teacher's Guide. Northeast Marine Specimens, Box 1, Woods Hole, Mass.

Watson, Fletcher G. 'The Teaching of Physics . . .' *Science Activities,* vol. 10, nos. 35–37, November 1973. Useful aid for selection of any curricular material.

Wentworth, Daniel F.; Couchman, J. Kenneth; MacBean, John C.; Stecher, Adam. *Examining Your Environment* (EYE). Holt, Rinehart and Winston of Canada, 55 Horner Ave., Toronto, Ont. M8Z 4X6. 12 modular units written for use above grade 4. Each can also serve as an inquiry-oriented resource guide for the teacher and thus may be used as the starting point for a Unit Box on a particular topic (e.g., *Pollution*).

Whitla, Dean K., and Pinck, Dan C. *Essentially Elementary Science: A Report on the Status of Elementary Science in Massachusetts Schools,* submitted to the Massachusetts Advisory Council on Education, Office of Instructional Research and Evaluation in the Faculty of Arts and Sciences and the Harvard Graduate School of Education, Harvard University, March 1973. Relevant to the starting points, rationale, and spirit behind hundreds of Unit Boxes assembled at Jersey City State College and in Ontario.

Workshop for Learning Things. 5 Bridge St., Watertown, Mass. 02172. *The Camera Cookbook* (BA003-3, $2.00) and other items of interest.

Minnesota Environmental Sciences Foundation Project. Environmental Science Center, 5400 Glenwood Ave., Golden Valley, Minn. 55422. More than 40 teacher's guides on such topics as *The Cemetery as a Social Document; Brine Shrimp; Minnows and Models; Population Growth; Snow and Ice.*

Time, Space, and Matter (TSM). McGraw-Hill Ryerson, 330 Progress Ave., Scarborough, Ont. M1P 2Z5. 9 teacher's guides and supportive materials to pursue 9 investigations related to one another by an interesting story line. Suitable for use at any level above grade 6.

University of Illinois Elementary School Science Project (ESSP). From Fitzhenry and Whiteside, 150 Lesmill Rd., Don Mills, Ont. M3B 2T5. 6 teacher guidebooks (and pupil books) in basic astronomy and related physical science.

Note: The above is a condensed version of a 266-item annotated source directory by the author. Copyright Mitchell E. Batoff, 1974.

A Typical Schedule

9:00 a.m. - class begins - circle - sing songs
9:10 - individual work/groups
10:20 - circle - juice and cookies
10:30 - playroom/work
11:10 - circle - sing songs
11:20 - tidy up and dress up
11:30 - class ends

Nelephant Nursery School

Alf Chaiton
Department of History and Philosophy, OISE

'Education is not something which the teacher does, it is a natural process which develops spontaneously'.

—MARIA MONTESSORI (sign on door of Nelephant Nursery School).

A major plank of the British Labour Party platform has been the demand for nursery school education. In the past six years or so, the English have begun to perceive the need for organized educational opportunities during the formative years. In Ontario the same problems have been met by the increased establishment of junior kindergarten classes in the elementary schools. To many in the community this solution is insufficient to deal with the need, and they have set up their own preschool programs.

Among these new schools is one opened in St. Catharines in September 1971 by a group of concerned parents who believed that there were not enough quality nursery school opportunities for their children and decided to start their own program. Nelephant Nursery School, as it came to be known, was intended to be a very special school, an equal-opportunity school – ideally, half of the children would be from advantaged and half from disadvantaged homes.

The organizers intuitively felt that it would be useful for youngsters to see how other youngsters approached situations. They agreed that when the children entered elementary school they would be confronted with similar circumstances, and because of this prior training would be better able to adapt. In addition, they accepted as a basic premise the need to give disadvantaged children an opportunity for experiences that would increase their chances for success in school.

They decided that the best approach to teaching young children was to train the senses in a manner as organized as possible without being authoritarian, and chose the Montessori instructional techniques. (See *Orbit* 12, April 1972, 'Making it with Montessori' by Judith Edmunds.)

Nelephant is a cooperative nursery school incorporated as a charitable organization. Because of the difficulty of raising money in a conservative and cautious city, at the start it operated as a strictly private half-time program with all parents paying fees of $35 per month. Problems in bringing disadvantaged children into the program through the St. Catharines welfare department have prolonged this situation; last year out of the nineteen children there were four subsidized by the cooperative. Most of the needed additional funds raised so far have come through parents' donations.

However, the Ontario government has recently passed Bill 160, which allows money for nursery school care to be paid directly by the government to the schools and which covers 80 percent of the costs for welfare children. With this new support Nelephant had hoped to begin full-time operation last January with sufficient attendance to divide into morning and afternoon groups, but the government guidelines were not ready in time. The decision was then made that rather than expanding to full time by admitting more fee-paying children, a target date of September would be set to launch the kind of program that was originally conceived. This has now taken place.

The governing body of the school is a Board of Directors consisting of ten members – five community resource people and five parents elected by the parents. The Board appoints the coordinator, who sees that things run smoothly, and hires the teacher and teacher aide. Various other necessary duties are divided among the parents.

The school was first located in a church 'community room' but quickly outgrew it. Presently it is working out of Edith Cavell public school, and enjoying the active cooperation of the Board of Education and the school administration.

Ms. Gail Neff, coordinator of the program, believes that there is a desperate need for nursery school education in the province, especially for the disadvantaged. The idea is that a youngster who has had this experience will adapt better to any situation he gets into. 'We don't agree with the argument that kindergarten should be strictly a socializing experience,' says Ms. Neff. 'We've found that our kids *want* to learn, and the rules in the public school don't allow children to advance quickly enough. For many of us, of course, it's no great problem because we can let our children read at home; but not everyone is in the position to do so.'

According to Ms. Neff, the preschool is not trying to take over the curriculum of the kindergarten, but attempting to lay the foundation – socialization and 'learning how to learn' – so that the school can work on more substantial learning tasks. Preschool is also an opportunity to discover at an early point in time whether a child has any major problems – for example, if he needs glasses, or can't hear well, or has perceptual difficulties. If this waits until the child enters the public school system, he is already at a serious disadvantage. With the introduction of Bill 160, they hope that nursery school education will be expanding throughout Ontario and will allow the kindergartens to provide a real learning experience.

The procedure of the school was in part developed as the result of OISE research on volunteer helpers in school programs, which, Ms. Neff states, 'sparked the imagination of the organizers.' Their conclusions were that it is very easy for parents to become alienated from the school when they are told not to interfere with the learning process. Parent participation means more than periodic PTA meetings; it includes involvement in the classroom situation. The policy of Nelephant is that all parents who can must come in on a rotational basis to help out in the class. They feel this is valuable not just for the children, who get more individual attention, but also for the parents.

Educators such as Dr. Hank Hedges of OISE's Niagara Field Development Centre (who is a member of the Board) come to parents' monthly meetings to act as resource people in aiding the parents to understand how children learn. The parents are enthused with the process – in fact, their most frequent complaint is that there aren't enough meetings. As Ms. Neff remarked, 'It's fun to know what's going on. I came in as a noncommitted parent, but after you start getting involved, you can't stop. Two years later, I'm now running the program.'

According to Margherita Corman, the head teacher, 'If a person is reasonably informed about learning, not *forcing* the child to learn and making it a pleasurable experience instead of a distasteful one, I don't think he or she really needs any formal qualifications to teach. That's why parent participation in the classroom can be so invaluable.

'You have to like children,' she added. 'You have to enjoy working with them on *your* own level, not talking down to them (they're not babies!) but talking to them as you would to a friend (only you have to watch the long words and profanity!)'

In setting up the school the parents, after a great deal of research, decided that Nelephant should be a Montessori classroom. Ms. Neff calls the program 'modified Montessori,' but Ms. Corman says it is a regular Montessori classroom 'as it should be.'

They are keenly aware of many of the bad impressions created by Montessori schools that have been ruled by extreme firmness, tending to rigidity. This rigidity results when the child cannot do anything else but what the teacher says and how the teacher says to do it. Ms. Corman acknowledged that there are very few free, creative Montessori schools, but thinks the situation is improving. Instruction in Montessori is just being introduced into the community colleges, and the teacher aide, Donna McCloskey, who recently completed the Early Childhood Education program at Lambton College in Sarnia, thinks it was a valuable introduction to a great variety of teaching methods. Ms. Corman, who did her Montessori training in England and has taught at Montessori schools in Canada for the past five years, finds these graduates extremely flexible in approach and of high caliber.

'Not all teachers,' she states, 'accept the idea of freedom of movement for the child in the classroom. For too many the child needs to be "good," to be quiet, and to do as he's told. He's not allowed to stray from the teacher's formation – if he's just wandering around, he's directed to an activity. That, for me, is poor technique. If he wants to do that activity, fine; but if not, well, let him find something he wants to do.'

Ms. Corman likes the idea of a half-day program because she personally feels that it's hard for children to spend all day at school. As well, she thinks it is important for children to have time with their parents. This, in part, accounts for the emphasis on parent involvement in the classroom, but in addition the techniques picked up at the school are generally incorporated into the home environment. A parent can come up with the near equivalent of a Montessori class simply by adapting the psychology of Montessori to the materials at hand. Presentation is the key element, not the actual materials.

She points out that Montessori doesn't help everyone, because 'not everyone is interested in learning.' Montessori, she says, teaches a child to learn how to learn. It gives him a technique for applying his natural imaginative skills. 'The most important consideration,' she concludes, 'is that the children are enjoying being with other children, enjoying coming to school, and enjoying working. Because if they don't learn to enjoy it, heaven help them!'

The Women's Kit

Becky Kane and Margot Smith, OISE

Pam Harris originated the idea for producing *The Women's Kit.* (She had previously worked with OISE's Media Group on other multimedia boxes — *Ten Years in a Box, The Perception Bag,* and *The Ecology Box.*) Work on the Kit was started in mid-1972 by Pam; six months later Becky Kane and Donna Pothaar joined the project, which was allotted a small budget through OISE's Research and Development program.

News of what we were doing began to spread by word of mouth. People came to talk to us and many wanted to contribute something to the Kit. We had meetings with teachers and students and people from the community. Some wrote articles and poems; some did illustrations; many offered useful suggestions and ideas. A lot of energy was generated within the group. It was exciting for everyone to do creative work and to find support and encouragement from each other.

What Is It?

The Women's Kit is a cardboard box full of materials (pamphlets, posters, records, postcards, newspaper pages, biographies, short stories, poems, drawings, plays, filmstrips, photographs, slides, historical documents, collages, etc.), all directly or indirectly about women and their socialization. There are somewhere between 150 and 200 items and the box weighs about 20 pounds.

The Kit was basically designed for the high school and community college level of study, but is proving to be suitable for use with any group of people, teenagers through adults, and in many situations besides the formal educational setting. It may be used with all-female groups, all-male groups, or mixed groups. The subject 'women' is a huge one because it touches on every aspect of our day-to-day lives. It is about people and our relationships and how we view the world.

The aim of the Women's Kit is to provide a focus for people to look at some fundamental questions:

What limits for human beings are inherent in sex-role stereotyping and the socialization process? What kind of societal values and behavior could allow all humans to realize their fullest potential and make the greatest possible contribution to society?

How can women gain a sense of their own history? History has dismissed what women have done as trivial and unrelated to the 'real' forces that have shaped our past. By denying groups their past, their role models, we leave the individual feeling helpless and alone. Problems become personal failings rather than the realization that the conditions of society create these problems. What, then, is it that history has actually recorded, what has it omitted, and why?

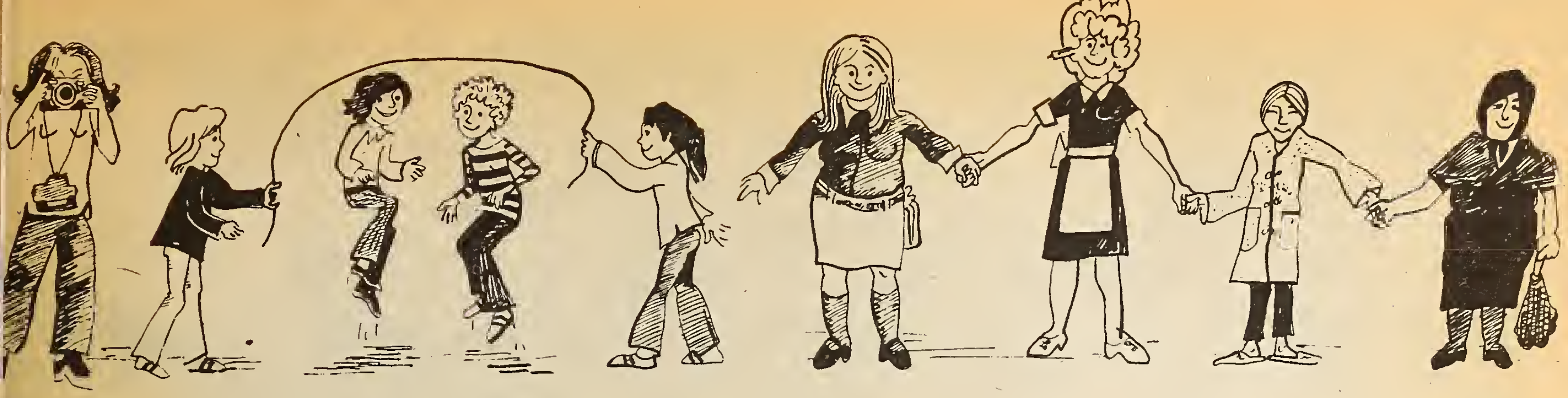
Through this kind of learning and questioning, people may begin to gain the freedom to make choices about their own lives based on some knowledge of what is involved.

Why Women's Studies?

There currently exist several pilot courses related to Women's Studies, approved by the Ontario Ministry of Education, for the high school level. The subject also is covered in the guidelines for many other courses (Man in Society, Canadian Family in Perspective, etc.). At the community college level there is a great deal of exciting pioneering work being done in the field of Women's Studies.

For whatever reasons, there are presently a lot of people 'studying women,' and there has recently become an obvious need and demand for material that would be suitable for the high school level and would relate to the Canadian experience. There are currently available many publications about the role of women in society. Daily there are items in the mass media, but most of them are very superficial and usually of the 'bra burning' or 'aren't the women cute doing this' attitude. The mass media attitude is the one most people have encountered, and any serious study or experience will find itself constantly having to overcome, rather than be helped by, this exposure. Many other materials available are heavily 'intellectual' or analytical, and largely geared to the middle-class, urban, educated North American (such as lengthy analyses of women in upper-management positions). Some of the materials are full of rhetoric and often speak from anger. Anger may be an important phase that women must go through, but it is often not very effective as a tool of communication, except to other angry people.

Many teachers have spent hours of personal time collecting resource materials to use in their classes; and although many of them have put together very large collections, they still do not find it sufficient. And so we have tried to draw together an extensive collection of materials, some of which are available elsewhere but most of which were designed specifically for



this Kit, keeping in mind five criteria:

1. that it be suitable for use with a group of people who have not had exposure to many of the basic concepts;
2. that it derive from or relate to the Canadian experience;
3. that it be material not necessarily readily available elsewhere;
4. that it be sufficiently stimulating or of sufficient depth to be suitable for groups doing more extensive research or having a greater background in the concepts;
5. that it serve as an encouragement and support for the many people who are interested in developing the concept of Women's Studies.

The subject of women is a controversial one. Most people have built-in ideas and emotions and are often reluctant to question patterns of thinking and emotional responses that have become 'natural' to them over the years. Women's Lib immediately springs to mind in this connection; it is important to stress the distortion that has occurred as a result of the media presenting the movement in terms of the old patterns and responses. There will probably be many occasions on which the Kit will be criticized as being propaganda. But *all* education is propaganda in the sense that it presents information from a certain perspective. Education is one of society's main forms of socialization, and even historical 'fact' is dependent on that society's perspective — for example, the U.S. still thinks and teaches students that it won the War of 1812.

The assumption that this Kit Is not valid because it represents only the 'women's point of view' denies the fact that society has formally accepted the male point of view for over 2,000 years. The Kit is one of several small steps being taken in an attempt to balance the *human* point of view.

The Reaction So Far

This Kit is a part of OISE's ongoing research on multimedia kits as a learning tool. During 1973/74 170 Kits were distributed to high schools and community colleges (mostly in Ontario) for field testing and evaluation. These Kits then belonged to the teachers receiving them; they for their part were responsible for shipping charges and for supplying us with extensive feedback about its use and effectiveness. By the time we were ready to distribute the Kits for field testing we had had over 500 requests. Because this was far more than we were budgeted to make, and because we wanted it to reach as many people as possible and to be used in many different situations, we also held 20 Kits available for loan.

In choosing the schools in which the Kits were to be field tested we tried to balance out the factors of geographic location, type of school (collegiate, composite, vocational, community college), course in which it would be used, sex of teacher, sex ratio of students, and type of community (rural, urban, suburban). We also tried to include some situations where all factors predicted that the reaction to the Kit would be negative.

There are some difficulties in evaluating this style of multimedia kit, particularly if the goal is objective assessment with statistical supporting evidence. First, you cannot measure the amount of information acquired through the use of materials because the Kit is designed so that each student has an opportunity to choose what particularly interests him. It is not expected that all the students will see all the material. Second, because the experience the individual student will have when relating to the materials is affected by his sociological background, and because the material is concerned with social values, customs, and taboos, his response is a subjective and emotional one. Third, for the same reasons the values the teacher brings to the class will play a greater part than is normally the case.

Recognizing these factors we first requested that a subjective journal be kept by each teacher, and later by their students as well. From the response to these we extracted common concerns and experiences and developed a more objective questionnaire, which we sent out to 500 students and 200 teachers. Additional questionnaires were also sent to the teachers asking them to rate the materials in the Kit as teaching tools.

One of the most pleasurable and surprising aspects of this past year's project was reading the questionnaires as they were returned to us. Pleasurable, because it was obvious from the lengthy and often imaginative responses to the series of subjective questions in the questionnaire that *The Women's Kit* had made a very strong impact on the students. They, for the most part, were delighted with the opportunity to express their feelings. And surprising, because in terms of what we had felt to be the relevant sociological factors (sex, parents' occupations and schooling, number and sex of children in the family, type of community) the attitudes revealed by the students did not always fit in with our predictions. For example, in many cases it was the students in the rural areas who reacted positively and deeply to the Kit and the class discussions it aroused, while the students from the Toronto area appeared somewhat more blasé. Not all of the comments by students were supportive; one male student suggested that the makers of the Kit should be hanged, and a couple of others felt that burning the Kit would be more useful than reading or studying it.

It is perhaps natural that the most enthusiastic responses came from the

Pamela Harris

women students: 'It made me proud that I was a woman.' 'I didn't know women had done so many wonderful things.' 'At first I thought the Women's Kit was just radical women's libber stuff but once I got into it I really liked it.'

One game we played while reading each questionnaire was to guess the sex of the student or teacher answering. (This information came at the end.) Most often we were right. The women students were generally more involved in the materials, and their answers reflected their individual reactions. The men's answers were usually more theoretical and detached. But occasionally we were fooled, as in the case of the student who chose the mini-biography of Agnes Macphail as his favorite item in the Kit because it taught him that he should not give up because if you are really determined you can overcome many obstacles as she had done. His identification with her struggle was complete and direct. Quite a change having a male look to a woman as his role model!

There were several allusions to fiery arguments and debates that went on in the classroom, and many students felt that they learned a great deal about their own attitudes and the attitudes of their classmates as a result.

Teachers too felt that the Kit had taught them a great deal. One man teacher discovered that his own attitudes had been more chauvinistic than he had hitherto realized intellectually. A woman teacher said that the Kit had helped her to love her students again.

The response to the very existence of *The Women's Kit* has been extremely enthusiastic. And so, with well over a thousand letters expressing appreciation and asking for more information, the OISE Editorial Board decided to push ahead and have it published. It is now ready for sale, and OISE has agreed to make it available at cost so that community groups, individuals, and small organizations will be able to afford it as well as school boards. The price – $50.00.

Working on *The Women's Kit* has been an emotional, sometimes exasperating, but exciting project for us all. And this next year we will be developing new materials for Women's Studies. We hope to do more in depth on Canadian women in history, to develop materials specifically aimed at elementary students and teachers, and to move into different media — for example, games, film, videotape, and oral history tapes.

We would be delighted to hear from readers who have materials or ideas for materials, who can suggest areas where materials are needed, or who are willing to participate in field testing materials currently in preparation. Please contact us at the Women's Project, OISE.

To Create a Thinking Program for the Elementary School

Floyd Robinson
OISE Northeastern Centre, North Bay

The title of this article describes the goal that a number of OISE researchers and curriculum developers presumptuously set themselves a few years ago. Quite apart from its heroic title, our project seemed justified on the grounds that the development of thinking skills consistently appears near the top of any list of educational objectives, whether constructed by teachers or the general public.

Six years have now passed, and many tons of paper have been processed into the products resulting from the Elementary School Thinking Project, to use the name by which it has become known. During that period of time, members of our group have spent literally thousands of hours studying the thinking behavior of individual children, trying out new methods and materials with small groups of children, teaching in classrooms, and helping teachers to understand and use our ideas. So perhaps the time has now come to render a verdict on the critical question: Can the typical school in Ontario significantly improve the thinking performance of the children with whom it is entrusted?

My own answer would be an incautious and unequivocal *yes*. I believe that enough ideas and related teaching materials have been developed that a school could start now in a small way and build cumulatively to a point where within a few years the thinking behavior of its students would be at a level far beyond what its staff presently believe possible. When we began this project and were groping for some kind of performance standard to describe what we had in mind, we sometimes said that our objective was to double the level of mental functioning of school graduates. Alternately we said our objective was to develop by the end of the elementary school a level of intellectual performance equal to or greater than that now exhibited by high school graduates. Nothing that I have observed in classrooms or in our own test results has caused me to believe that such objectives are in any way unrealistic.

But the cumulative approach necessary to bring this off will not be an easy one for most school staffs, who in many cases will themselves have to learn new concepts and skills and drastically alter some of their traditional ways of relating to students, other teachers, and the broader spectrum of those who contribute in some way to the child's intellectual development. In the remainder of this article I will outline some of the more important dimensions of this needed change.

A Scheme for Thinking about Thinking

The first and possibly most difficult task for the school staff will be to develop a common conceptual scheme for a thinking program. By a conceptual scheme we mean a set of concepts for describing thinking skills more accurately than laymen do, and a developmental scheme or hierarchy that indicates a progression among these skills from the simple to the complex. Without such a conceptual scheme, the individual teacher will have no notion of 'what leads to what,' and hence will not be in a very strong position to do anything systematic. And unless such a scheme is shared among teachers who work at different grade levels and in different subject specialties, the possibility of a cumulative effort is virtually nonexistent.

This is, unfortunately, the situation that exists today. Those teachers who are making a deliberate effort to stimulate thinking skills often work at cross-purposes, without seeing the relationship of their efforts to those of other teachers. A good case in point is the language arts teacher who attempts to do something on 'critical reading' but who does not see that the skills for analyzing cause-effect arguments that she is trying to get the students to apply in their reading have their origin in physical science experiments and derive their meaning from that origin. Another good example is the tendency for science and geography teachers to work their own approaches to problem solving without ever seeming to recognize the commonalities or differences in their approach; the result is that these subjects are seen as completely different domains and there is little visible transfer of thinking skills between them.

The scheme to which our group has been moving recognizes four levels of complexity and organization. At the lowest level we have what might be termed *primitive intellectual abilities*, which appear in young children without formal instruction and irrespective of the cultural milieu into which they are born. These abilities — observing, classifying, seriating, and setting up correspondences are some of the better known — help the child make sense of an otherwise bewildering stimulus world.

Once the child comes to school, however, a deliberate effort is made to develop what might be termed *finding out skills.* These skills — and we may think here of decoding written symbols, computation with numbers, measurement, graphing and tabulating data — have been invented by a culture, and they are deliberately taught in school because they are thought to be a prerequisite for effective functioning within that culture.

One of the important facets of our approach is a contention that each of these second-level skills can be decomposed into primitive intellectual abilities, and that knowledge of this connection is essential for effective pedagogical intervention. For example, although most schools treat measurement as a somewhat isolated component of the arithmetic program, simple analysis reveals that it is built upon skills of observation and setting up correspondences and that it also depends upon the notion of conservation.

At the next level of organization of intellectual ability the student draws together a number of second-order skills in a more complex episode of intellectual functioning. For example, near the end of the junior grades, or in the early senior elementary grades, the student may learn the notion of an 'experiment.' This concept acts as an organizing device that informs the student what skills are to be brought into play, and in what order, when he is trying to figure out 'what affects what' in a physical system. For example, as he tries to figure out what characteristics of a steel rod influence the amount it will bend, this strategy will inform the student that he should first identify the variables in the system (classification); then identify those that are potentially causal (classification); then vary one of these latter factors (measurement) while holding the others constant and observing the variation in the amount the rod bends (measurement); and finally interpret the result (numerical computation, classification).

These third-level intellectual skills, which we have also termed *problem-solving* or *inquiry strategies*, have been one of the major foci of our Elementary School Thinking Project. What we set out to do, and did in fact accomplish, was to develop an integrated set of models that would apply broadly across the range of subjects taught in senior elementary grades. These strategies have been found to be effective, results varying from small but significant to large and spectacular gains, and it has become clear that a large part of the thinking component of the senior elementary school program can be organized around this scheme.

In one approach, for example, the initial emphasis is in the language arts field, where students are taught to categorize the questions that naturally occur in the course of becoming familiar with phenomena. Each class of non-factual questions tends to occur in a specific subject area, and the teachers in this area undertake to convey the appropriate problem-solving strategies for answering them; thus the strategy for logical inquiry is taught in mathematics; the strategies for experimental approaches to a cause-effect analysis are taught in science; a strategy for case-study analysis is taught in history; a strategy for correlational analysis is taught in geography; and a strategy for decision making is taught in guidance. But all the strategies are linked together in a progression — and at each stage the particular strategy under investigation is fed back into the language arts program and is employed as the basis for analyzing arguments that appear in the written accounts a student encounters in advertisements, newspapers, and public media generally.

While our own program has focused on these first three levels of thinking skills, we recognize that the attainment of the individual strategy does not complete the mind's attempt to organize its structures into broader patterns of functioning. Let us suppose, for example, that a classroom teacher reads the research on thinking in an attempt to find out what classroom interventions he might make. What this teacher will find in the literature is a large number of studies, many of them reporting the results of individual experiments. So it is clear that the teacher would have to invoke a strategy for experimentation as he reads each new article in order to determine whether its conclusions are to be trusted. And yet the intellectual strategy of a good research reviewer involves something more than this: it has to do, for instance, with what quantity of material will be read before a generalization is formulated, in what order the material will be read, and how individual reports — each relating to a particular context and often in apparent conflict — can be 'added together' to yield an overall picture. While we recognize the importance of trying to identify, describe, and (where appropriate) teach metastrategies of the type mentioned above, such a discussion would seem to take us beyond the scope of the elementary school program and hence beyond the present article.

The author, Floyd Robinson, with an elementary school class.

Facing Up to Unpleasant Facts about Thinking and Schooling

No great enterprise can be founded upon self-delusion, and an early task of the school must be to make an honest assessment of what contribution its program actually makes to the child's thinking abilities. It is easy for the school to become confused here, because children come to it both short in physical stature and intellectually unsophisticated and leave much taller and much more sophisticated. So it is easy to believe that there has been as much growth in thinking as there has been in height, and, moreover, since the school's program is *intended* to develop thinking, that any intellectual growth observed is the result of its efforts.

This perspective has two obvious and fatal flaws. The first is that what the school takes to be intellectual sophistication in graduates is often little more than an enhanced verbal facility, which derives from a larger vocabulary and the use of more complex sentences. Verbal facility is a quality that may be respected in its own right, but it should not be mistaken for thinking. At several points in our investigations we have given the same task to students of different ages, and we have always been shocked to see how little growth there appears to be in the intellectual grasp of the problem once the excess verbiage has been stripped away; on more than one occasion we have concluded after such an analysis that what the high school graduate has really learned is not how to think better, but how to put up a verbal facade to hide the fact that he cannot come to intellectual grips with the problem.

The second flaw, of course, is to attribute whatever growth does occur to the efforts of the school, when the more plausible explanation frequently is that this change is the result of pure maturation or the effort of other socializing agencies. It would appear, for example, that certain structural changes do occur in children's thinking as they get older; these can be attributed to the interplay between inborn factors and a nonrestrictive environment and do not require any special effort of schooling.

The plain fact is that, lofty aims notwithstanding, our schools would be hard pressed to provide evidence that they produce growth in any sophisticated culturally useful type of thinking beyond that which can be attributed to maturation and the effort of other socializing agencies. Indeed, the programs in those areas that seem potentialy rich in opportunities to develop complex thinking soon degenerate into a ritualistic rehearsal of low-level skills.

Mathematics, one of the two main pillars of the elementary school program, offers a good case in point. Very, very early in the game, arithmetic instruction reverts to something akin to mindless rehearsal of mechanical computation skills. We say the exercise is 'mindless' advisedly because — as most teachers will admit, and as a great deal of research has shown — the vast majority of students do not know how to use these computational skills in any sort of realistic problem situation.

And is the situation in the language arts field (to speak now of the other major pillar of the elementary school program) any better? It is probably true that there is a slow but consistent improvement taking place in our schools with respect to students' ability to read quickly and show at least minimal comprehension of what they've read; moreover, with the advent of 'levels' programs in reading, a significant proportion of more capable readers now reach adult standards in speed and simple comprehension by the end of grade 6. But what never fails to shock the observer is the incredible gullibility shown by even these better readers, who, it would appear, do not possess even the rudiments of an intellectual scheme for determining whether or not they should believe the opinions and conclusions in what they read. In the majority of cases this childlike innocence and trust of alleged authority appears to persist into adulthood.

So while the school must continue to propose lofty goals, and send optimistic messages out toward the general public, it is necessary for any subsequent action that a school staff try to make an honest appraisal of its actual accomplishments in the improvement of thinking performance.

Putting Some Oomph into Our Thinking Pedagogy

The traditional pattern for local curriculum development is one in which committees of teachers meet together to share experiences and ideas, and from this sharing to propose modifications in present practice. This approach works fairly well when teachers are dealing with a type of behavior for which the school has built up a considerable body of professional knowledge. But it fails utterly, however, when the objective is the development of some new kind of skill, or a radical improvement in the standard of performance in a conventional skill.

We attribute a large part of whatever success we have attained in our thinking program to the opportunity team members had of spending many hours studying the thinking performance of individual children. But teachers themselves must do this if they are to check out a conceptual scheme for thinking, for secondhand accounts cannot adequately convey the required sensitivity to the phenomena. Even more important, perhaps, novel ideas for intervention are more likely to emerge when the teacher remains closely tuned to the child's ongoing work — that is, in a one-to-one situation. Third, and this above all else, it is no secret that many of the significant cognitive leaps occur in the same one-to-one situation, where the teacher can judge the precise moment to force such a leap and can devise a teaching vehicle that is particularly right for this individual child. As an indication of the magnitude of the effect of this personalized knowledge and individual teaching we very early developed the rule of thumb that what the teacher was able to do in the way of developing thinking skills in the large-group situation we could comfortably handle two grades lower with small groups of children, and four grades lower with individual children.

Now there was a time, and that not so many years ago, when teachers could have acknowledged such discrepancies in performance with equanimity, asserting that: 'We know we could do wonderful things if we could observe individual children and teach individually, but you simply have to face up to the realities of the classroom.' But this reasoning is beginning to sound a bit hollow and suggests something other than lack of opportunity. For as far as the observation of individual children is concerned teachers now have available a number of professional development days that could be much better used for that purpose than for the various types of 'entertainment' that are being thrown into the gap, often at the last moment, to give the appearance of planned activity.

And as far as individualized instruction is concerned, one of our members has produced massive documentation for the proposition that schools can increase their effective manpower in the primary grades by a factor of two or three by simply recruiting and putting to use unpaid voluntary helpers of all kinds — parents, older students, senior citizens, members of professional associations, and the like.

A Remaining Conundrum: Creating the Right Motivation for Thinking

There are some very significant ways in which school climates must change if they are to foster the development of thinking skills. At a fairly superficial level of analysis, it seems obvious that the school that wants to teach thinking must be prepared to abide by the troublesome implications of student thought. At a certain phase the student will sharpen his newly acquired thinking skills on whatever material comes to hand, and the decisions and judgments of teachers and principals may become favorite targets for this expertise. We have seen inquiry-trained students, for example, openly challenge the decisions of a principal on the grounds that his solution was based on an inadequate conceptualization of the problem and was inferior to theirs. Such intellectual muscle-flexing could be disturbing to the teacher or principal who plays the omniscient role.

It is one thing, however, to tolerate and encourage the barbs and rasps of a budding thinker, but this says little about how these skills should be taught in the first place. This is an issue on which our group has remained divided. Some of us have seen nothing wrong with the approach that says, 'Let's lay specific skills on students and let them get their kicks from exercising a newly acquired competence.' Another group has argued for an appeal to the child's natural competitiveness and for the introduction of a broadly based set of thinking skills through the use of classroom games. And still another group takes the position that intellectual strategies should grow out of the student's experience, as a formal recapitulation of what he has been doing intuitively in his efforts to find out for himself. Difference of opinion is rooted in differing philosophical views on the nature of human motivation and growth; and while there is undoubtedly no final answer, developing a comprehensive thinking program in a school requires that a staff think through its position on these matters.

Summary and References

This article has sketched the general conceptual scheme that unites the several segments of OISE's major thrust in elementary school thinking and has touched on some of the problems that attend the school's attempt to develop a comprehensive effort toward the improvement of thinking ability. For the specifics of the program developments in greater detail, the reader is referred to the following:

For a general account, see F. G. Robinson, J. Tickle, and D. W. Brison, *Inquiry Training: Fusing Theory and Practice* (Profiles in Practical Education No. 4, OISE, 1972).* For a brief account of methodology see F. G. Robinson and D. Story, 'Teaching a Model for Experiments' (Northeastern Centre, 1973). The complete program is found in F. Robinson et al., 'Inquiry Training Program' (Niagara Centre).

For an overview of primitive intellectual abilities, see L. Popp et al., 'Basic Thinking Skills' (Niagara Centre, 1974). See also E. Regan and K. Leithwood, 'Grade One Thinking Units' (OISE, 1973). For specific accounts of how primitive intellectual abilities are developed into finding-out skills, see Mathematics Learning Study Group, 'Classification and Logic' (Niagara Centre, 1972); J. P. Robinson et al., 'Rate and Ratio' (Niagara Centre, 1973); Measurement Learning Study Group, 'Measurement Monograph' (Northeastern Centre, 1973).

For an account of how the proposed scheme for thinking relates to critical reading, see 'Critical Reading Monograph' (Northeastern Centre, 1973).

For the use of volunteers, see F. Robinson, D. Brison, H. Hedges, J. Hill, and C. Yau, *Volunteer Helpers in Elementary Schools* (Profiles in Practical Education No. 1, OISE, 1971).* Numerous other materials have also been prepared by H. Hedges, Niagara Centre.

For developing skills through games, see C. Bereiter et al., 'Thinking Games' (OISE, 1973). For the experience/intuition viewpoint, see R. Kenzie, 'From Self-Directed Inquiry to Experimentation' (OISE, 1974), and R. Kenzie, 'Toward a Concept of Self-Directed Inquiry' (OISE, 1974).

*Available from Publications Sales, OISE. Inquiries for all other materials listed should be addressed to Irene Leps, Office of Field Development, OISE.

Note: The main participants in the Elementary School Thinking Project have been Valerie Anderson, Carl Bereiter, David Brison, Glen Evans, Cathy Frye, Hank Hedges, Jane Hill, Bob Kenzie, Ken Leithwood, Irene Leps, Jim Love, Len Popp, Ellen Regan, Floyd Robinson, Paul Robinson, Howard Russell, Pat Sullivan, and John Tickle. This diverse group has never been entirely of one mind, and the present article purports to reflect the views only of the author.

H.S.1 STUDIES

RESEARCH ON THE CREDIT SYSTEM

Editorial Division, OISE

The 1972/73 school year was the first in which the Ministry of Education's new program for Ontario secondary schools became mandatory across the province. In the same year, through its policy of contract and grant-in-aid funding of research studies, the Ministry supported a number of investigations in the secondary schools that undertook to assess the impact of the new system. That is, what success were the schools having in implementing it, and what were its effects on the students?

Several of these studies were undertaken by OISE, and the results are now being published as the H.S.1 Studies series.

The investigation conducted by K. A. Leithwood and his team (*The Individualized System: Courses and Patterns of Student Choice*, in preparation) particularly sought to identify what efforts the schools were making to offer a choice of courses that would carry out the philosophy expressed in Circular H.S.1 (1972/73): 'A student's program at any given time should reflect his current state of development. Each student must be permitted to select courses best suited to his interests, abilities, and goals for the future. A credit system with individual time-tables allows him to work at his own level in appropriate courses. . . . Procedures for evaluating student progress should be varied to meet the requirements of different courses and different groups of students. . . . School schedules should allow for educational techniques which involve varied sizes of student groups, different patterns of time allotment, new approaches to learning and teaching . . .' (p. 5). The research sample included fifty-five schools, with data obtained from principals, guidance personnel, and 3,182 teachers.

The researchers found that there were now at least one and a half times as many courses. Some were brand-new, such as theater arts, Space and Man, and consumer education. Others were specialized offshoots of traditional courses: geography, for example, spawned environmental geography and cultural geography. Relevance has become a prime consideration in introducing courses such as waitressing, bachelor living, cosmetology, and others.

Surprisingly, the core programs favored by educators were overwhelmingly favored by students also, including the specialized new courses in traditional disciplines. This finding certainly counters the suspicion that students left on their own would choose the easy courses or choose capriciously. Nevertheless, the researchers also found that a majority of schools made core subjects compulsory or virtually compulsory, particularly in the first years of high school; and they raise the question whether freedom of choice is in fact as real as the Ministry document has proposed.

A second study team, led by R. H. Farquhar and D. W. Ryan, examined in depth in fifteen schools the major constraints and facilitating factors in the implementation of the credit system, and the emergence of new role relationships. Focusing on administration and leadership under the new system, the research revealed patterns of stress and support contradicting some previous assumptions about attitudes and behavior in an atmosphere of flexibility.

Dr. Ryan's report, *The Individualized System: Administration and Leadership*, records extensively the interview comments of the various members of the school community about permissiveness and responsibility, freedom of choice, and adoption of new roles. Principals, vice-principals, teachers, guidance personnel, students, and parents register their opinions, which are compared with the data gathered from records, reports, and observations.

The forthright comments of all the interviewees illustrate the lack of understanding among levels in the school system and between the school and the community, and the inadequacy of Circular H.S.1 in giving clear directions. However, this report also stresses a spirit of willingness to cooperate in working out solutions to these problems and provide the best education for the individual student.

Research results in two other vital areas are described in *The Individualized System: Student Social and Achievement Patterns*, an intensive study of five schools by Gordon Laxer, Ross E. Traub, and Katherine Wayne. A major criticism of the Branch and Program structure that preceded the inauguration of the credit system was that students were typed according to the program in which they were enrolled, and the status distinctions that went along with this typing hurt those in other than five-year Arts and Science. This study team found that the status barriers were falling — that because of the individualized timetables, students were encountering others with a full spectrum of abilities and interests and were forming friendships across a wide variety of programs.

As for achievement, it was found to be impossible to accurately compare the achievement of students in 1972/73 with that even five years earlier, in view of changing curricula and methods of evaluation. Interestingly, teachers' *perceptions* of trends in achievement showed notable differences: whereas most of the teachers in four schools in this study saw standards as falling, those in the school that had most wholeheartedly embraced the philosophy of the new system saw standards as rising. It thus appears that opinions about trends in standards of achievement may be related more to staff attitudes and staff morale than to actual trends. (Note — An article on this research study, 'H.S.1 and Some Secondary Schools,' was published in *Orbit* 20.)

The Individualized System: Student Participation in Decision-Making by William E. Alexander and Joseph P. Farrell (currently in preparation) is not addressed specifically to the effects of the credit system; however, the questions investigated do relate directly to its philosophical basis as stated in Circular H.S.1. The major overall conclusion of this study is quite clear: what students may be learning about responsible decision-making in terms of their course selection does not extend to the rest of their school experience.

Student government, supposed to be the training ground for democratic participation, is viewed with cynicism by the overwhelming majority of students as 'a tool of the administration.' Teachers describe even relatively effective student governments as 'passive,' and the student reps themselves report disillusionment and frustration.

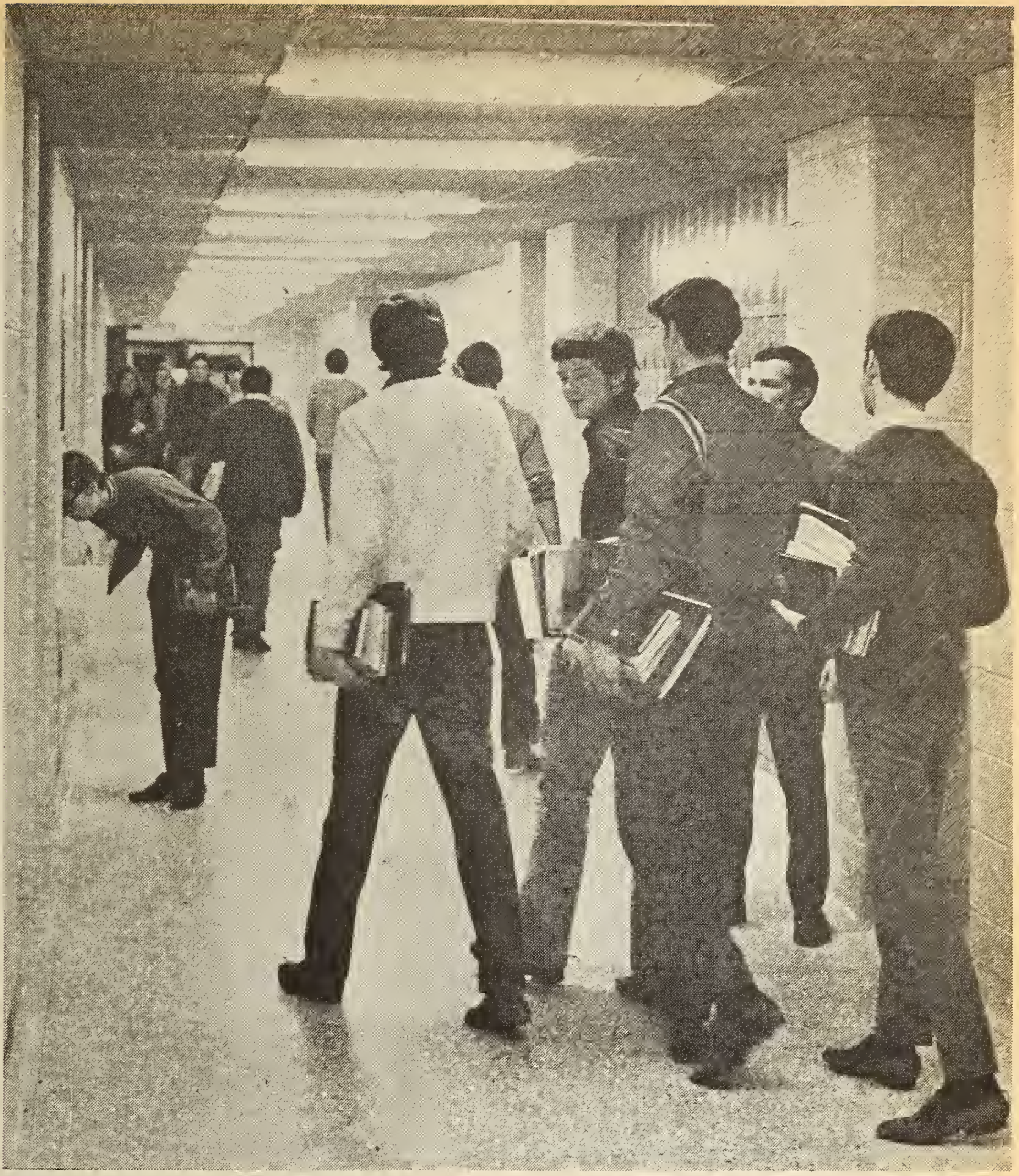
Although principals view the student government as influential, only in rare cases do they in fact give it any formal decision-making power. Unfortunately, one valid reason for their not delegating power is that it is the principal who is on the firing line if a student decision rouses any controversy in the community or criticism from the board.

The authors contend, though, that the immaturity of students is a wholly unsatisfactory reason for withholding from them all decision-making authority. On the contrary, they propose that making decisions and living with the consequences is a skill that must be learned through practice, and that the school must provide opportunities for this practice.

Without doubt, the lowering of the age of majority to eighteen has made conspicuous the contrast between the senior student's in-school and out-of-school decision-making responsibilities. Moreover, educators themselves have specified learning to make good decisions as a goal of education. The authors of this report have found, however, that the mechanisms presently thought to support this goal — student councils or house-system governments — make a contribution that falls somewhere between negligible and negative.

Educators will find *The Individualized System: Findings from Five Studies* by W. G. Fleming an invaluable overview of all of these separate investigations. The findings are reviewed by specific area of concern — overall attitudes to the change, courses available, levels of difficulty, patterns of course choice and distribution of enrollment, compulsory core programs and prerequisite systems, guidance services, achievement trends, staff relationships, student relationships, teaching and evaluation methods, and numerous other issues that present actual or potential problems. This mode of presenting the research results provides an excellent point of departure for school people trying to clarify and evaluate what the credit system has meant in the context of their own school.

All of these publications may be ordered from Publications Sales,
Ontario Institute for Studies in Education,
252 Bloor Street West,
Toronto M5S 1V6.



Can. Lit. 5	Auto Mech. X	Math. 4A	Chem. 4A	Can. Lit. 5
Demog. 3A	Auto Mech. X		Chem. 4A	Demog. 3A
	Can. Lit. 5	Food Arts X	Math. 4A	
	Demog. 3A	Food Arts X		
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Math. 4A	Chem. 4A	Can. Lit. 5	Auto Mech. X	Math. 4A
	Chem. 4A	Demog. 3A	Auto Mech. X	
Food Arts X	Math. 4A		Can. Lit. 5	Food Arts X
Food Arts X			Demog. 3A	Food Arts X

The credit system timetable allows the student to explore a range of courses for career goals and personal interest.

Etudiants francophones à l'Institut

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Puisque je suis anglophone et ancienne étudiante de français, une voix française me frappe toujours l'oreille. Ce plaisir se présente souvent à l'Institut parce que, parmi les mille trois cents étudiants qui y suivent des cours en été, ou les deux mille deux cents en hiver, la population francophone est toujours représentée. Ce n'est pas un phénomène récent qu'il existe des étudiants de ce groupe linguistique dans le programme post-gradué d'Education à l'Université de Toronto. De plus, d'année en année le nombre augmente. Il est intéressant de suivre le progrès de certains individus pour voir les manières diverses dont on peut gagner un diplôme.

Les programmes d'été semblent la voie préférée quand il y a de grandes distances à considérer. Quand il était professeur au niveau secondaire dans l'est de l'Ontario, Jacques Beauchemin a passé quatre étés à Toronto pour obtenir en 1962, sa maîtrise en éducation. Les huit cours qu'il a choisis sont tous dans le domaine du 'Educational Administration.' Actuellement, Monsieur Beauchemin est surintendant des écoles séparées dans la région de Prescott-Russell. Un autre Franco-Ontarien qui a obtenu un diplôme en éducation grâce aux cours d'été est André Vachon, conseiller en français du Conseil Niagara-Sud. Quand il a commencé ses études avec spécialisation en 'Curriculum,' Monsieur Vachon était directeur d'une école élémentaire à Cornwall. C'était en 1972 que l'Université de Toronto lui a décerné une maîtrise en éducation.

Les éducateurs qui habitent dans l'agglomération torontoise ont l'occasion de combiner des cours d'été avec des cours du soir pendant l'année scolaire afin de recevoir leur diplôme dans une

ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

Etudiants Rhéal Gauthier, Henri DesRoches, Jean Levesque et Hilda Nessim avec Professeur Dormer Ellis devant l'institute.

plus courte période. De cette façon, Lionel Rémillard, directeur de l'école secondaire Etienne Brûlé, a complété récemment ses études en 'Educational Administration.' Actuellement, Hélène Barbès, psychologue du Metropolitan Toronto Separate School Board suit certains cours en 'Sociology' et en 'Applied Psychology.' Un autre exemple est Hilda Nessim, professeur du Seneca College of Applied Arts and Technology qui assiste à certains cours en 'History and Philosophy of Education.' Les étudiants qui fréquentent l'Institut en temps partiel pendant l'année scolaire ne sont pas tous Torontois. Bien qu'ils demeurent à une bonne distance, quelques-uns font le voyage à Toronto une fois par semaine pour suivre un cours du soir. Quand il était directeur d'une des écoles élémentaires publiques de Welland, Marc-Yvain Giroux a obtenu sa maîtrise en suivant des cours du soir aussi bien que des cours d'été.

Jusqu'à récemment, les cours de l'Institut se donnaient uniquement à Toronto, mais d'ici, et de plus en plus à l'avenir, l'Institut offrira certains cours à plusieurs autres endroits en Ontario où, heureusement, demeurent un bon nombre de Franco-Ontariens — par exemple, à Timmins, Sudbury, North Bay et Windsor. Cette innovation accélère certainement le programme d'Henri DesRoches, directeur de l'école française à Sarnia. Depuis 1973, Monsieur DesRoches suit des cours d'été à Toronto et, de plus, il va régulièrement à Windsor pendant l'année scolaire pour continuer ses études en 'Educational Administration.' Il attend sa maîtrise en 1975.

Une autre variation du programme pour la maîtrise réduit le nombre de cours (six au lieu de huit) si on les combine avec la rédaction d'une thèse. Le premier Franco-Ontarien qui a suivi cette route fut Rhéal Perron. En 1965, quand il enseignait au niveau secondaire à Sudbury, il a rédigé une thèse au sujet des élèves bilingues de la 9ième année de cette ville. A présent, Monsieur Perron est directeur de l'école secondaire française à North Bay.

Bien sûr, la méthode la plus rapide d'achever la maîtrise en éducation de l'Université de Toronto est de suivre des cours en plein temps. Ainsi, peut-on obtenir le diplôme après douze mois d'études. Rosaire Cloutier, ancien directeur d'une école secondaire privée à Ottawa est venu à l'Institut en juillet 1968 et il a assisté à la collation des grades en juin 1969. Il travaille maintenant au Ministère de l'Education de l'Ontario à titre de conseiller à l'éducation dans le service de la programmation scolaire. Plus récemment, Rhéal Gauthier, professeur de français à l'école secondaire De La Salle, Ottawa, a pris un congé d'une année scolaire pour étudier à l'Institut. Il a complété ses cours en été 1974 avec spécialisation en 'Curriculum.'

Les aspirants au grade 'Ph.D.' en éducation de l'Université de Toronto sont obligés de passer deux années scolaires en plein temps à l'Institut après avoir obtenu leur maîtrise. Bien que la plupart des étudiants soient Ontariens, l'Institut attire aussi quelques éducateurs des autres provinces du Canada et même d'outre-mer. En 1973, on a conféré le doctorat à Ronald Duhamel, originaire du Manitoba, qui est devenu subséquemment surintendant des écoles publiques à Kapuskasing. Sa thèse concerne 'Various Forms of Support and Non-support of Bilingual Immersion Programs in Schools.' Parmi les éducateurs québecois qui ont reçu leur doctorat de l'Université de Toronto se trouve Gérald Scallon, membre du personnel enseignant de l'Université Laval. Après avoir complété ses cours en 'Measurement and Evaluation,' il a écrit une thèse intitulée 'Intrinsic Determinants of the Difficulty of Non-verbal Classification Items.' Jean Levesque, né au Nouveau-Brunswick, vient de commencer ses études vers un doctorat avec spécialisation en 'Curriculum.' Il s'intéresse spécialement à l'enseignement de l'anglais comme langue seconde dans la province de Québec où il enseignait aux niveaux secondaire et universitaire pendant plusieurs ans. Monsieur Levesque fera sa recherche doctorale dans ce domaine. Originaire du Togo, Blaise Datey fréquentait des universités en Afrique et au Québec avant de venir à l'Institut où il a obtenu en 1973 son doctorat en 'Educational Planning.' Sa thèse intitulée 'The Socio-Political Process of Innovation and Planning as Demonstrated by the Introduction of CEGEPs in Quebec's Educational System' est applicable à son travail actuel au Ministère de l'Education du Québec.

Après avoir cité tant d'exemples, on peut poser la question, 'Qu'est-ce qu'il y a à l'Institut qui y attire les éducateurs francophones?' En général, jusqu'au niveau du baccalauréat, ces étudiants ont fait leurs études dans leur langue maternelle — c'est-à-dire, en français. Néanmoins, ils optent pour un programme post-gradué à l'Institut. Pourquoi? Il va sans dire que la langue d'instruction à l'Institut est normalement l'anglais. La plupart des professeurs aussi bien que la plupart des étudiants sont unilingues. Quelques-uns des Québecois prétendent attacher beaucoup de valeur à l'occasion de perfectionner leur anglais parlé au moyen d'un séjour à Toronto. Cependant, beaucoup d'étudiants québecois et tous les Franco-Ontariens sont déjà complètement bilingues. Ils seraient capables de faire leurs études post-graduées soit en anglais soit en français. Pourquoi choisissent-ils l'Institut? Les étudiants de n'importe quelle langue maternelle citent la variété et l'abondance des cours, chacun donné par un professeur compétent en sa matière. L'Institut comprend dix départements: Adult Education, Applied Psychology, Computer Applications, Curriculum, Educational Administration, Educational Planning, History and Philosophy, Measurement and Evaluation, Sociology et Special Education. Parmi les étudiants de chaque département, on trouve toujours un petit nombre de francophones. A l'Institut, il y a plusieurs professeurs qui lisent facilement le français et un nombre plus restreint qui parlent français; par exemple, les professeurs H. H. Stern, Edmund Brent et Merrill Swain (Curriculum), Dormer Ellis et W. G. Fleming (Measurement and Evaluation) et J. Hockley (History and Philosophy). Le responsable des programmes post-gradués à l'Institut, le Docteur George Flower, est bilingue. Avec la permission du professeur intéressé, tout étudiant francophone peut soumettre en français le travail écrit d'un cours. En 1968 quand il enseignait à l'Ecole Normale de l'Université d'Ottawa, Pierre Xatruch a complété sa maîtrise en éducation à l'Université de Toronto en soumettant au Docteur Dormer Ellis le rapport d'un projet de recherche qu'il avait fait chez les élèves-maîtres franco-ontariens. Pour des raisons pratiques, Monsieur Xatruch a utilisé la langue française, non seulement pour les questionnaires qu'il a fait subir aux normaliens, mais aussi pour les tableaux descriptifs et le rapport lui-même.

Selon les règlements de l'Université de Toronto, tout étudiant peut rédiger sa thèse du doctorat en français. Quelquefois, c'est un étudiant en éducation qui le fait. Récemment, Claude Touchette a obtenu son doctorat en 'Adult Education' en écrivant une thèse intitulée 'Evolution des objectifs et des programmes en éducation des adultes à l'Université de Montréal, 1876–1950.' Présentement, Norman Giroux, membre du personnel enseignant de l'Université de Sherbrooke, fait son doctorat à l'Institut dans le département du 'Special Education.' Son projet de recherche concerne certains élèves québecois et, par conséquent, Monsieur Giroux songe à écrire sa thèse en français. Cependant, les cas mentionnés ci-dessus sont exceptionnels. La plus grande partie des étudiants francophones à l'Institut préfèrent écrire tous leurs travaux, même leurs thèses, en anglais.

Revenons à la question, 'Qu'est-ce qu'il y a à l'Institut qui y attire les francophones?' On a déjà mentionné la qualité de l'instruction et la multiplicité de cours. Selon certains éducateurs, notamment ceux qui travaillent dans les écoles ontariennes pour les élèves d'expression française, les cours post-gradués de l'Université de Toronto leur donnent l'occasion de faire la connaissance des professeurs et des groupes d'étudiants qui ne sont pas tous de la même origine ethnique. Chaque personne a ses raisons particulières pour étudier à l'Institut. Qu'il soit Canadien ou qu'il vienne d'un pays étranger, le francophone est toujours le bienvenu à l'Institut d'études pédagogiques de l'Ontario.

WHAT'S

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For over a hundred years the accepted basic skills have been reading, writing, and arithmetic. But are these the only basics? To help ourselves into (if not through) this question, we may find it easier to think about man in what we might call his childhood. In those long-ago years, having lost his refuge in the trees, with no claws, no strong jaws, no long teeth, muscularly weak, man was physically defenseless against the great beasts of other species. His only real strength was a bigger, far more complex brain. With his man-brain he could think rings around his predators. And along with the development of that brain (which, in its functioning, we call mind) man learned that men together can do many things to satisfy their needs that one alone could never do.

Then, as men formed tribes, one of the things that they learned together was how to make the most of all the things around them – and how to preserve them for the sustenance of life. They taught themselves to turn trees, rocks, vines, and earth into artifacts to their advantage. But as they were doing all those things, the most useful art that they taught themselves was how to talk. Speech made thinking audible and was thus the binding force that made man's togetherness effective – first for his salvation, then for turning himself into whatever he was or might be.

In man's beginning, these four were the basic learnings: how to use his thinking mind, how to work together with others to help one another, how to turn things and happenings around him to his advantage, and how to talk. These were the ways in which each man educated himself and helped others to educate themselves.

In what we now sometimes proudly refer to as man's more civilized state, it is difficult to see much change in the basic skills man needs for both his survival and his further development. He is, of course, challenged by the highly sophisticated context in which he must satisfy his needs. He must learn to apply his thinking powers to many more sets of relationships – almost infinitely more – and to a far more intricate and complex variety of issues. He must learn how to live and help live, not just within a tribe but within a city, a state, a continent – within a world of people. He must learn how to use and preserve not only the bits and pieces of his environment but the whole of it, both for himself and for all mankind. He must learn how to communicate and receive communication in varieties of symbolic and representational forms.

Although we have stated these four basic skills separately as if they were different things, they are really interdependent, for they are part and parcel of the mind. If we decide, for example, to help the child develop his thinking mind for all it is worth, we must give him something to think about, and there is nothing that he can possibly think about except the people and things in the universe around him and his own relationship to them.

Then when he starts thinking about his environment, he finds that he can do his thinking much better if he thinks with other children, they helping him, he giving them a boost, and the teacher helping all of them. So he learns not only how to work with other people but how all the people are dependent upon one another. Learning the skill of working with other people, the child discovers in himself the compassion of humanity; and that is a value which from time immemorial the philosophers have called Goodness.

There's another thing about thinking without which our minds would be of no particle of use to us. The thinking mind is continually making things and these things are ideas. Then it puts these ideas together to make those bigger ideas that we call concepts. Ideas and concepts, however, are not of much use to anybody just floating around in the mind. They become useful only when we put them to work by making things that we can see and feel and hear and smell – things that we can use. But the stuff from which we make things – things like axe handles, automobiles, dishrags, and spaceships – all come from our environment. And learning how to use the stuff of our environment to make things is our third skill. A major concern that we have these days is to learn how to use our environment so that we don't use it up.

The other component of our environment (besides things) is people. There are all sorts of relationships, like friendships, partnerships, teams, clubs, grocery stores, churches, steel works, schools, and on and on, ending up with the closest relationship of all in marriage and the family. Learning how to make these relationships work smoothly and effectively is the second basic skill listed earlier – how to work together to help one another.

Fortunately, to help make these relationships work smoothly, one of the things that the man-brain created was language. Language is the universal making of the mind. Language is the major form by which the mind turns its inventions of ideas and concepts into forms that the mind itself can use for further thinking, forms that other people can use to further *their* thinking, forms by which we may discern one another's thoughts so that we may know whether we two, we three, or we thousand can work successfully together.

Communication of our thinking to both ourselves and other people may take many forms. The three on which we spend most time in school are the forms made of the alphabetical symbols and the quantitative symbols of mathematics. I have always thought it odd that, except for usage (such as 'I did it' not 'I done it'), we spend hardly any time at all in school on the universal communication form of oral symbols, which is speech. As a matter of fact, until a very few years ago, and even yet in many classrooms, talking by the children was anathema, because if they talked they couldn't hear the teacher talking.

But there are other forms of communication besides speech, print, and writing. There is the language of body movement – what a difference, for example, a smile may make! There is painting and drawing and sculpture, drafting and graphing. One of the best communications of a child's thinking that I ever saw was a painting called 'Dejection.' It was a picture of the walls of a prison cell closing in on the lonely huddled-up man in the corner. After twenty years, what that little girl said to me is as clear as if I had seen the picture yesterday. No words could have told her story with the intensity she needed to tell it. Then there is music that the child can create to tell his thinking – the dance of joy or the dirge of sorrow; drama in which the children reveal their understanding of the minds of a variety of people. Crafts, too, are a means of expression. In a woodworking shop I saw a boy looking proudly at a jardiniere stand that he had just finished for his mother. The stand and the joy and satisfaction on the boy's face told me all that I needed to know about the relationship between him and his mother. He communicated to me one small portion of his soul.

Whatever the form of the communication, there are essential concepts that we must work on. The child can communicate only the ideas that he has made – and the only sources of those ideas are the people and the things that he has experienced. And when the child receives a communication that anybody has spoken to him or that he reads in print or any other form of communication, the only way that he can find the meaning of it is by applying his own experience to what he hears or sees.

So here we have the close-fitting fabric of our four categories of essential skills, all knit together by the main one, the child's thinking mind. By experiences of people and things, the child creates a headful of ideas about his environment. Thinking together with other people, he learns how to play his part in the society in which he lives. Thinking about things, he learns how to make the best use of his environment, not only for his own sake but for that of everybody. Then, putting his ideas and concepts into language, in whatever form, not only does he stabilize his ideas and concepts but he can tell other people about them and see and hear what other people think.

More than a hundred years ago, Disraeli summed up in a single sentence everything that I have said. He wrote, 'Experience is the child of thought; and thought is the child of action.'

As we have observed, communication is only one of four of the basic skills, and reading, writing, spelling, and arithmetic are only four of perhaps a dozen forms of good communication. In the primary grades why do we spend such a very great deal of time on them? One official to whom I spoke estimated that many primary teachers spend as much as seventy-five percent of their children's time on the three R's.

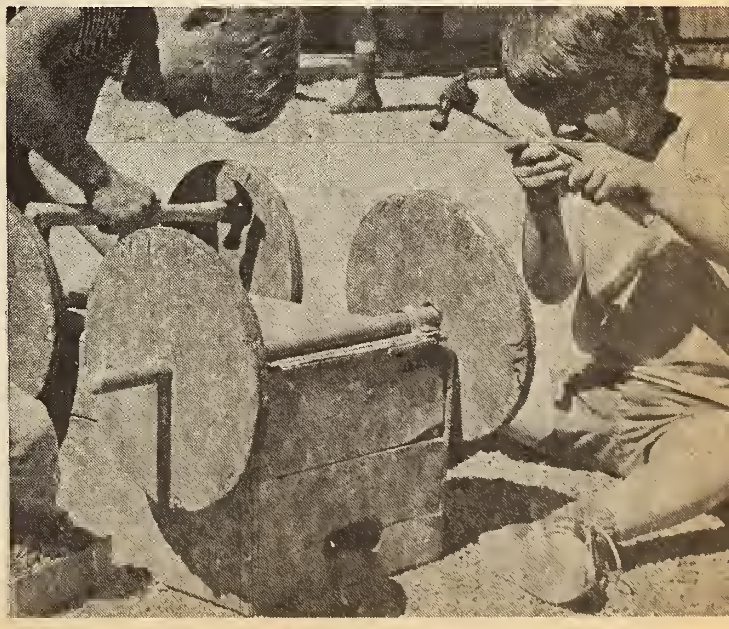
One reason that we do so is that we always have. Another is that many parents and some administrators say that we aren't doing a good job of teaching reading and arithmetic, so we must spend more and more time on them. And why do people complain that we don't get good results, even in so much time? Because, generally, we go at the job backwards. We start with the alphabetic and numerical symbols, words and numbers; and black marks on white paper just don't communicate – not until children, out of their own experience, can put meaning into them. So, start with children's experiences – a firehall or a zoo, say, or a purposeful visit to a supermarket. Let them get together in small groups afterwards to talk about what they did, and out comes communication in bundles, and a lot of it in question marks. Then let them go to the library to find answers to their question marks; they'll read! But they will also do much more than learn communication skills. They will start the budding of our three other genuinely basic skills as well.

Let me give an example. In the educational clinic at OISE, Dr. Hildred Rawson helps non-readers and near non-readers learn to read. In an hour each Saturday for twenty weeks, she teaches children first to think and then to apply their new thinking skills to the comprehension of printed symbols. The children come to her anxious, depressed, troubled, and sometimes troublesome because they are failures; they leave her happy. They have learned to read, certainly, many of them reading better than other children in the grade that they are in. But they have learned a set of values that goes far beyond their reading.

Last fall a school sent her a 14-year-old non-reader. Trying to compensate for his failure, he was extremely difficult to handle in the classroom. After only twelve lessons, the principal called Dr. Rawson and said, 'What on earth have you done to that boy? He is completely changed. His teacher says that she is now happy to have him in her class.' The principal did not say a word about his new ability to read; he was so excited at the change in personality.

Children who have learned to think their way into achievement of our four basic sets of skills, who are at home with other people, who are steadily gaining new insights into the values of things around them and can communicate their experiences – such children know who they are, respect that person, gain confidence in their ability to do things, know their value to themselves and others. They are on their way to the full development of their full humanity. They know their a-b-c-d-e-f-g's, their 1-2-3-4-5-6-10's, all right, but so much more important, they know themselves.

BASIC



CANADIAN NATIONAL

Teaching Aids from the Community

Publications

The following CN publications are available free to teachers only; because of limited supplies, class sets cannot be provided.

We are all aware of the shortages of raw material that are causing a steady increase in the cost of printed material. In order to ensure that materials reviewed in this column are used to the best possible advantage, we suggest that teachers make specific plans for their use before submitting requests.

Please address requests for CN publications to:

CN Public Relations
Room 250
Union Station
Toronto, Ontario M5J 1E7

CN Tower

An illustrated brochure tells the story of the tower that has already radically altered Toronto's skyline – its purpose, architectural design, construction, and eventual place in Metro Centre. Complete statistical information is included.

CN Toronto Yard

A colorful, well-illustrated booklet that describes the huge complex operation of the CN Toronto yard. Underlining the scope of the constant state of change in the yard is the Vice-President's introductory comment – 'The booklet in your hands is out of date. It was out of date the day it was printed.' Not only does *CN Toronto Yard* provide information about equipment and personnel, it also includes extensive statistical information and an explanation of symbols, terminology, and procedures that are a part of daily life in 'the yard.'

Gas Arctic Systems

This 22-page color-illustrated booklet reviews an advanced program of research into the place of arctic gas pipelines in the North American energy markets. The brochure introduces the Gas Arctic Systems Study Group (consisting of five major Canadian and American gas and transportation companies, including CN) and explains its initial project. The source of petroleum energy on the Arctic frontier of North America is of vital significance to the energy-consuming areas of the south, and bridging the physical gap between supply and demand involves a 1,550-mile link with existing pipelines and a cost of some $1.5 billion. The undertaking represents the largest single project in the history of the international petroleum industry. Hostile climate and difficult terrain create a unique set of difficulties, and Gas Arctic has much to learn about ecology along the proposed route. But through trial and error, study, experimentation, ingenuity, and the pooling of knowledge, progress is being realized. *Gas Arctic Systems* is a saga of man's intrepidity in utilizing the resources of nature.

CN across Canada

A large display map follows the CN across Canada and along its subsidiary routes in the United States. The various facilities are clearly indicated. The reverse side features statistical information on each of the ten provinces and color photographs of their outstanding scenic attractions. This is a particularly useful teaching aid that would serve as background to a wide variety of lessons and projects.

Canadian National Today

A comprehensive 14-page review of the Crown corporation that began with a railway system and now embraces a hotel chain, a telecommunications network, subsidiary trucking and bus companies, a fleet of coastal vessels, an industrial location service, a real estate department, and an international consulting subsidiary. CN owns capital stock in Air Canada, and through wholly-owned United States subsidiaries its operations extend into twelve American states. CN also maintains sales offices in Europe and the Orient. In addition to outlining CN's ever-widening sphere of service, the statement includes a brief history of the lines that formed the original CNR.

Union Station

A brief résumé of the history, construction, and facilities of Union Station. The uncertainty of the station's future in the face of major redevelopment lends particular significance to this document.

Turbo

A 6-page review of Canadian National's Turbo – the most significant innovation in North American passenger train technology in the past hundred years. The summary describes every aspect of the Turbo's design, operation, and facilities and presents a graphic picture of an outstanding advance in Canadian travel.

Communications in the North

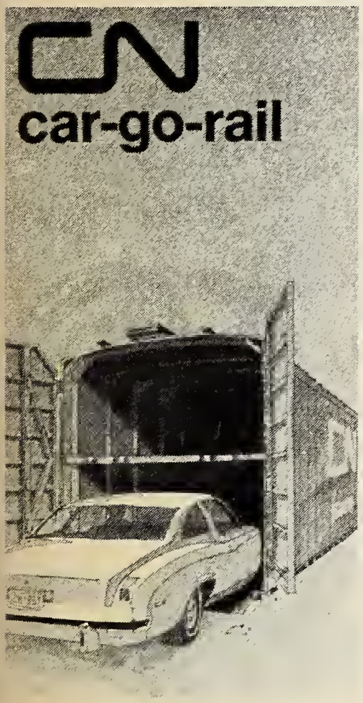
Only infrequently does a present-day record of technical progress include the sheer drama and human interest appeal found in *Communications in the North.* This illustrated 18-page booklet provides a detailed outline of CN's northern communications system as its bridges the isolation of remote areas; it also provides a glimpse of the people of the north, showing how links with the outside world are broadening and enriching their day-to-day living and, not infrequently, saving life itself. The booklet reviews the enormous task of establishing the communications system and deals succinctly with the resolution of practical problems and the international participation that made it possible.

CN Container

An illustrated brochure explains what the container is, how it is used, and how it has improved commercial transport.

Special Information Brochures
While these brochures are normally used in individual travel planning, they are included in the belief that the innovative teacher will find a variety of interesting uses for them. Since the titles are self-explanatory, they are listed without comment.

CN Condensed Schedule (timetable)
CN Red, White and Blue Fares
CN Accommodations
Savings with Family and Group Fares
CN Dayniter
CN Car-Go-Rail
'Auto with You' Plan



Films

All CN films are 16 mm, in color, with sound; all titles are available in English and French. The only cost to the borrower is payment of the return postage.

Requests, including alternative dates, should be submitted in writing at least three weeks prior to the date of showing to:

CN Film Library
4980 Buchan Street
Suite 301
Montreal, Quebec H4P 1S9
Telephone (514) 737-1147

Transportation:

CN '72
C4096 (27½ minutes)
A fast-moving review of CN's 1972 expansion looks at the growth of the Port of Halifax, the autoport concept, the movement of prairie grain, and the installation of dial telephones north of the Arctic Circle.

CN Quebec
C3387 (20 minutes)
An outline of CN's involvement in Quebec's natural and industrial resources and its contribution to the economic development of the province.

Containerization
C3191 (14½ minutes)
The container – a box that affords safer, surer merchandise handling – has revolutionized the transportation industry. Animation and live action illustrate its impact.

Fifty Years Later
C2627 (40 minutes)
In 1836 passenger trains entered service in Canada. By 1923, a plethora of railways induced government action and the Canadian National Railway system was created. Today it figures extensively in our social and economic life and its 50-year history is rich with the contrasts of a developing nation.

Halifax – The Natural Port
C4148 (16 minutes)
Halifax is fast becoming the main gateway for goods destined for the northern part of this continent. The film shows how import-export container traffic has kept pace with expanded international trade.

Motion
C3112 (14 minutes)
Described by critics at Expo '67 as 'strikingly beautiful,' this film explains the meaning of motion to man and how it affects him throughout his lifetime.

Movin'
C2594 (10 minutes)
Folksinger Gordon Lightfoot is featured in this lighthearted documentary that tells how CN freight keeps Canada's supplies and products on the move.

Pacific Tradeway
C3113 (14 minutes)
As far eastern trade expands, so must the port of Vancouver. The film shows how modern equipment handles the grain, potash, sulphur, and coal destined for the Orient.

Probing for Progress; The Biggest Yard in Town
C2875, C2987 (10 minutes for combined screening)
Probing for Progress visits CN's Technical Research Centre, examines projects, and looks into the future of transportation. *The Biggest Yard in Town* examines the activities of CN's largest reception and distribution point – the Toronto yard.

Rails North
C2784 (14 minutes)
Remote resource areas of the north are the site of CN's present-day pioneering. The film shows something of the vast northern frontiers and the homes and industries springing up there.

Steam
C3445 (10 minutes)
The iron horse runs again! The CN has re-created on film the days when the country's power came from the steam locomotive.

The Time and the Place
C2874 (11 minutes)
A review of the role that CN's Industrial Development Department plays in the selection of new plant locations. The film examines the human factors to be considered and looks at new industrial development related to our increasing production of raw materials.

The People's Railway
C4146 (54 minutes)
Some 80,000 people keep Canada's largest transportation system running round the clock. A behind-the-scenes look at the CN through the lives of a dozen or so employees on and off the job. (N.B. This film requires a 2,000-foot take-up reel.)

Unit Trains
C3389 (7 minutes)
World demand for Canada's natural resources grows steadily and our refineries and export centers must keep pace. CN's answer is the unit train, which moves a specific product from a loading point to a single destination on a regular basis. An informative look at modern transportation and resource development across Canada.

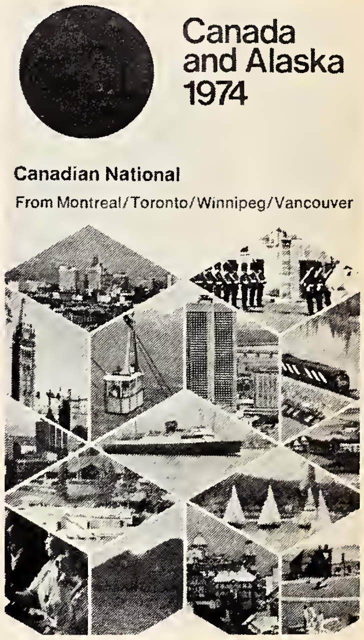
Travel:

Alaska – Cruise Style
C2245 (14 minutes)
A 1,000-mile, 8-day cruise up the Pacific coast – a fascinating intermingling of the old Klondike and the modern North.

Columbia Icefield; Maligne
C2428, C2555 (13 minutes for combined screening)
A visit to Jasper Park's most scenic locations: the Columbia Icefield (the largest glacier outside the Arctic Circle) and beautiful Maligne Lake.

Jasper: All This and Winter Too
C2943 (14 minutes)
Spectacular scenery in the Canadian Rockies highlights this film featuring Jasper National Park's Marmot Basin and famous ski trails.

Jasper Holiday
C2380 (14 minutes)
The Canadian Rockies offer a variety of holidays. Lakes, forests, waterfalls, mountains, and valleys provide beautiful settings for angling, swimming, golf, riding, and snowmobile tours of the Columbia Icefield.



In the Streets of Old Quebec
C2828 (24½ minutes)
History comes to life as a photographer explores Quebec City in a horse-drawn calèche. Narration is provided by the comments of tourists and sightseers.

Tee Off at Jasper
C2553 (11 minutes)
Scenic beauty and free-moving wildlife provide pleasure for golfers and non-golfers alike in this film shot at the Jasper Park Lodge championship golf course.

The Goldie Rush
C4147 (10 minutes)
Gerald Potterton used animation and color photographs to produce this rollicking 5,000-mile race across Canada. With a starting point in a mythical island east of Newfoundland, the film shows Canadian scenery at its best.

Telecommunications:

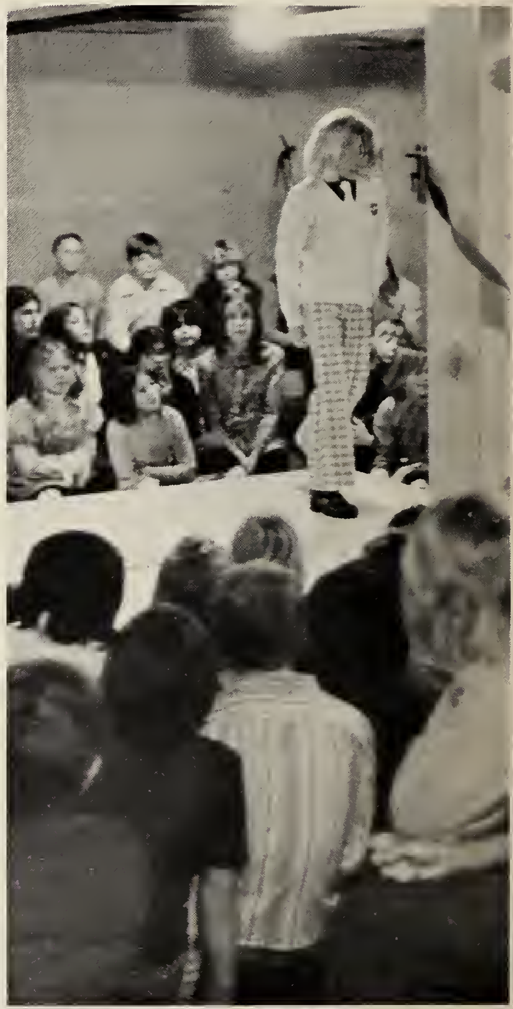
Voices of the North
C2593 (28 minutes)
Telecommunications are playing a vital role in linking Canada's Northwest Territories with the outside world. Microwave towers and telephone lines symbolize the rapid growth of such communities as Inuvik, Fort Simpson, and Hay River. *Voices of the North* looks at the changes taking place in this area and the people responsible for them.

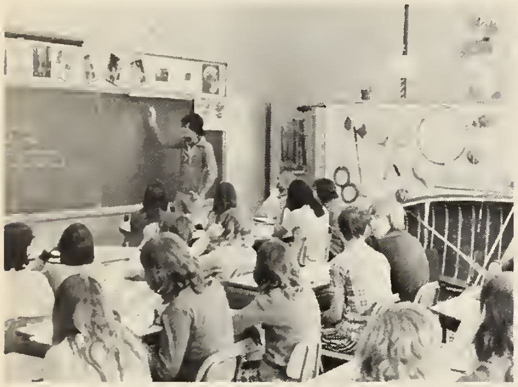
Eagle River Public School

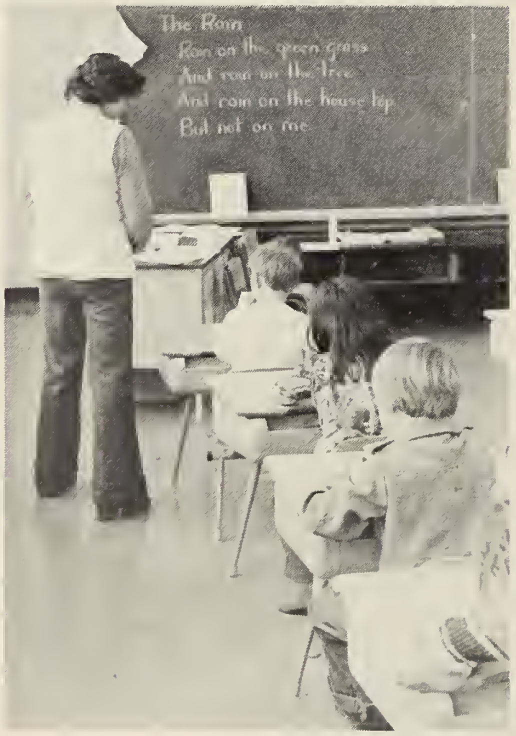
Eagle River is a small hamlet off the Trans-Canada Highway, about twenty miles west of Dryden. The public school there was opened in 1920, and was remodeled in the early sixties to enlarge it from two rooms to five. Many of the hundred and fifty students have to bus in from great distances.

The kindergarten is separate, but the eight grades are split up two to a room. In each room the two grades study the same subject at the same time, and there is no hard-and-fast distinction between them. With a fairly high percentage of Indian students, strong emphasis has been placed on the study of Indian life and culture; and many of the materials for this part of the curriculum are being developed within the school. There is also an interesting winter program of special activities suited to an area where the winter can be very cold and very long. The students are divided into fifteen groups, and once a week they become involved in such activities as breadmaking, sewing, and pottery, often assisted by parent volunteers. And on Monday evenings classes are held for parents in such subjects as French and the metric system — for in such a remote area, a school can make an unusually important contribution to the life of the community.

However, it is not so much in its programs or its organization that Eagle River strikes one as a remarkable school but in the happy cooperative atmosphere that prevails there. In many ways, the school is a reflection of its principal, Bill Errington, an unassuming, easygoing man whom the children find completely approachable. In circumstances that are often difficult, he and his small staff have managed to create a school that compares favorably with some of the better public schools in the cities.






The Rain
Rain on the green grass
And rain on the tree
And rain on the house top
But not on me.

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